

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4**



**AMENDMENT TO THE 1987
RECORD OF DECISION
PALMETTO WOOD PRESERVING
NATIONAL PRIORITIES LIST SUPERFUND SITE
DIXIANA, SOUTH CAROLINA**

AUGUST 2008



10588386

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ABBREVIATIONS AND ACRONYMS

ACC	Acid-copper-chromate
ARARs	Applicable or Relevant and Appropriate Requirements
CCA	Chromate copper arsenate
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
COC	Contaminants of Concern
COPC	Contaminants of Potential Concern
DPT	Direct push technology
EOS	emulsified oil substrate
EPA	U.S. Environmental Protection Agency
FCAP	Fluoride chromate arsenate phenol
FS	Feasibility Study
IC	Institutional Control
ISAB	In-Situ Anaerobic Bioremediation
kg	Kilogram
MCL	Maximum Contaminant Level
ug/l	Microgram per liter
MNA	Monitored Natural Attenuation
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PRB	Permeable Reactive Barrier
ROD	Record of Decision
RI	Remedial Investigation
RI/FS	Remedial Investigation and Feasibility Study
SARA	Superfund Amendments and Reauthorization Act
SC DHEC	South Carolina Department of Health and Environmental Control
SPLP	Synthetic Precipitation Leaching Procedure
USC	United States Code
WTS	Water treatment system

PART 1: THE DECLARATION

1.1 Site Name and Location

The National Priorities List (NPL) Site is located in Dixiana, Lexington County, South Carolina. The National Superfund Database Identification Number is SCD003362217.

1.2 Statement of Basis and Purpose

This decision document amends the Selected Remedy in the September 30, 1987 Record of Decision (ROD) for the Palmetto Wood Preserving Site (Palmetto Wood), Dixiana, Lexington County, South Carolina. The Selected Remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, as amended.

The U.S. Environmental Protection Agency (EPA), with concurrence from the South Carolina Department of Health and Environmental Control (SC DHEC), is amending the groundwater cleanup plan at the Palmetto Wood site. The amendment is changing the pump and treat remedy (groundwater is extracted, treated, and discharged to the local publicly owned treatment works (POTW)) to an in-situ anaerobic bioremediation treatment remedy where substrate is injected into the groundwater and the contamination is treated in place. This document also amends the cleanup goal for three contaminants; arsenic, chromium and copper. This amendment is necessary because it will achieve cleanup goals faster than the original plan, it is equally protective in the long term, and it is more cost effective than the original plan.

This decision is based on the Administrative Record for the Palmetto Wood Site, which has been developed in accordance with Section 113(k) of CERCLA, 42 USC Section 9613(k). The Administrative Record Index (Appendix D) identifies each of the items comprising the Administrative Record upon which the amendment of the Remedial Action is based. This amendment to the 1987 ROD will become part of the Administrative Record for the Palmetto Wood Site.

This site's Administrative Record is available for review at the Lexington County Main Library in Lexington, South Carolina, and at the United States Environmental Protection Agency (EPA) Region 4 Records Center in Atlanta, Georgia, at the following locations:

Lexington County Main Library
5440 Augusta Road
Lexington, SC
803) 785-2600

(Branch Hours: Mon - Thurs 8:30 – 8, Fri - Sat 8:30- 5:30, Sunday 2 – 5)

U.S. EPA, Record Center
61 Forsyth St., SW, 11th Floor
Atlanta, GA 30303
1-404-562-8946
Mon-Fri (7:30am - 4:30pm)

The State of South Carolina, acting through the Department of Health and Environmental Control (SC DHEC) concurs with the amendment of the Selected Remedy.

1.3 Assessment of the Site

The response action selected in this Amended ROD (AROD) is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

1.4 Description of the Selected Remedy

The selected remedy for the Palmetto Wood Site is in-situ anaerobic bioremediation, which is estimated to cost \$1,370,888 for the entire site. The components of this alternative are described in detail in Section 11.0 (Selected Remedy) of this AROD. Briefly, the major components of this alternative are:

- Installation of trenched and direct push permeable treatment walls.
- Injection of substrate using In-Situ Anaerobic Bioremediation (ISAB) for the treatment of chromium.
- Five (5) years of groundwater monitoring.
- Institutional controls to prevent human exposure to contaminated groundwater during implementation of the remedy.
- Amended groundwater cleanup goals for arsenic, chromium and copper.

1.5 Statutory Determinations

The selected remedy will achieve the mandates of CERCLA §121, and the regulatory requirements of the NCP. This remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions.

The selected remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduce the toxicity, mobility, or volume of hazardous substances through treatment). The groundwater, contaminated with chromium at significant levels, is considered to be "principal threat wastes" because chromium concentrations are present that pose a significant risk under any exposure scenario. Contaminated groundwater will be treated in-situ with emulsified oil substrate (EOS). The remedial design may assess whether a different substrate is warranted.

Restrictions on the use of groundwater are necessary because the concentrations of hazardous substances in the groundwater will not immediately allow unlimited use and unrestricted exposure. This site's groundwater is expected to eventually reach cleanup goals and thus the groundwater would have unlimited use and unrestricted exposure. However, because this site's soil remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will continue to be conducted every five years to ensure that the remedy provides adequate protection of human health and the environment.

1.6 ROD Data Certification Checklist

The following information is included in the Decision Summary (Part II) of this AROD. Additional information can be found in the Administrative Record file for this Site:

- Chemicals of concern and their respective concentrations
- Remediation levels (i.e. cleanup levels) established for the chemicals of concern and the bases for these levels
- Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected
- Key factor(s) that led to selecting the remedy

1.6 Authorizing Signature

This AROD documents the selected remedy for contamination at the Palmetto Wood Site. This remedy was selected by the EPA with the concurrence of SC DHEC (Appendix A). The Director of the Superfund Division (EPA, Region 4) has been delegated the authority to approve and sign this AROD.

U.S. Environmental Protection Agency (Region 4)

By:


Franklin E. Hill, Director
Superfund Division

Date:

8/15/08

PART 2: THE DECISION SUMMARY

This Decision Summary provides a description of the Site-specific factors and analyses that led to the selection of the remedy for the Site. It includes background information about the Site, the nature and extent of contamination found at the Site, and the rationale for the amendment of the remedy selected in the 1987 ROD.

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The Palmetto Wood Site is located in the rural community of Dixiana, Lexington County, South Carolina (Figure 1). The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification Number is SC000407449. The lead agency for the Palmetto Wood Site is the U.S. Environmental Protection Agency (EPA). The SC DHEC is the support agency.

The general study area for the Site is shown in Figure 2. The site is approximately 0.5 miles northeast of Interstate 26, southeast of West Columbia, South Carolina. The surface area of the site is approximately 5 acres in size and consists of two adjacent parcels; the first is 3.67 acres and the remainder is 1.33 acres.

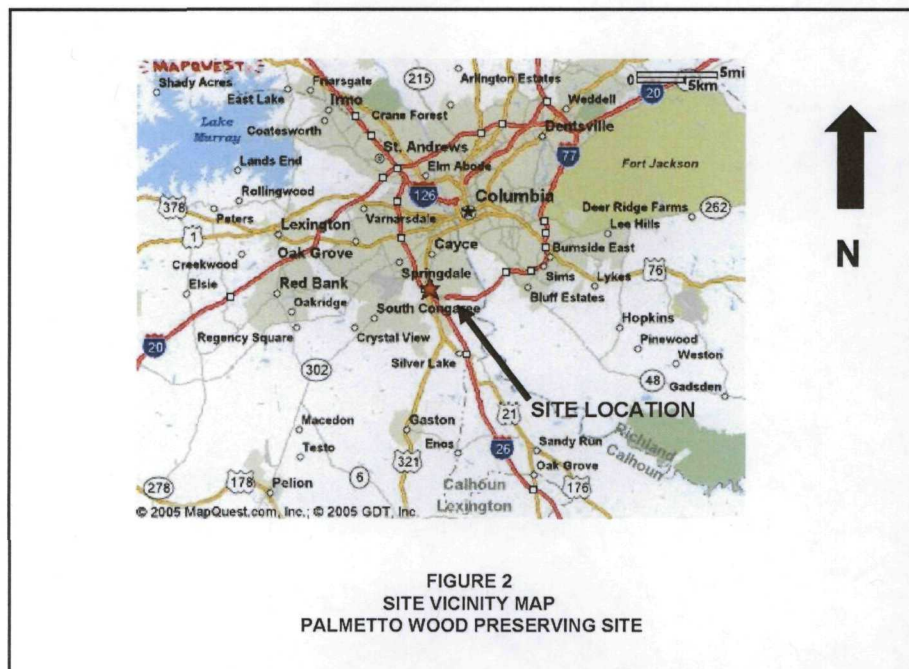
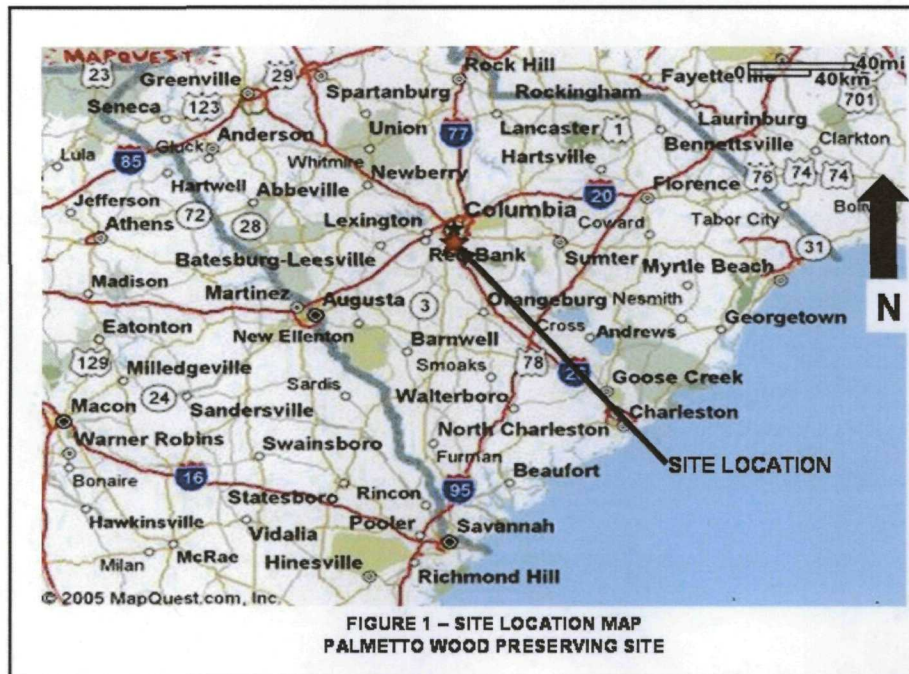
During the period of operation, the Site consisted of the plant structure and equipment including the pressure vessel, narrow gauge rail line, solution storage tanks, drip shed, storage and office building. When the company ceased operations in 1985, all equipment (including pressure cells, piping, narrow gauge rail line and above ground storage tanks) was removed from the Site.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 Site History

The Palmetto Wood Site is a decommissioned wood preserving facility that operated from 1963 until 1985. The original wood treating process used fluoride chromate arsenate phenol (FCAP) and an acid copper chromate (ACC). The process was switched to chromate copper arsenate (CCA) in 1980. The CCA process was used until the plant operations ceased in 1985.

During the treatment process, wood was loaded onto a small, narrow gauge railcar and moved into a pressure vessel where the material was pressure impregnated with the solution. The wood was then removed and allowed to dry, either in a drip shed or in the storage yard areas on nearby property.



2.2 Previous Investigations and Enforcement Activities

In 1981 and 1982, SC DHEC received complaints from residents and adjacent property owners that green liquids were running off-site and pooling nearby. As a result of these complaints, SC DHEC inspected the Site and collected soil and private well water samples. Although the water samples showed no evidence of contamination, soil samples indicated high levels of chromium were present. In April 1983, a new residential drinking water well was drilled 200 feet from the Site. Initial pumping yielded bright yellow water containing high levels of copper and chromium. Palmetto Wood subsequently supplied potable water to this residence from a well on-site. SC DHEC personnel sampled nearby private wells in May 1983, but did not find contamination in any other well.

EPA added the Palmetto Wood Site to the NPL in September 1983 and assumed responsibility for the Site. EPA conducted a Preliminary Assessment (PA) of the Site in November 1983. The PA indicated soil and ground water contamination beneath the main process area of the plant. EPA completed a Remedial Investigation (RI) in July 1986, characterizing the contamination at the Site and providing data to analyze the alternatives for remediation of the Site. A site layout is shown in Figure 3. The results of the RI indicated the presence and extent of contamination in surface water, sediments, soil and ground water on the Site and in the surrounding areas. The RI showed that the contamination was caused by the solution that was used to pressure treat lumber. The solution had dripped onto the soil and percolated into the ground, reaching the water table.

The RI showed the highest levels of soil contamination at the surface. The highest concentrations of metals (arsenic and chromium) in the subsurface soils were associated with the narrow gauge rail line and drip shed areas towards the east of the Site, and along the railroad tracks. The RI also showed that the groundwater beneath the Site was severely contaminated. Groundwater samples taken from 12 monitoring wells and 21 temporary wells revealed levels of copper, chromium, and arsenic that exceeded applicable standards. The contaminant with the highest concentration in the groundwater was chromium. Higher concentrations of metals were found in the shallow aquifer, but some leakage from the shallow aquifer into the deeper aquifer was evident. The RI indicated that the groundwater flow in both the shallow and deep aquifers was in an easterly direction towards the wetlands.

A Feasibility Study (FS) was conducted to analyze the remedial alternatives. EPA evaluated each of the alternatives for soil and groundwater remediation based upon cost, technical feasibility, institutional requirements, and the degree of protection of human health and the environment. After considering the public's comments on the preferred alternative, EPA signed and issued the ROD in September 1987. EPA began the remediation at the Site in 1988 using Superfund monies.

The remedy selected for soil consisted of soil excavation above cleanup levels specified in the ROD (summarized in Table 1 below), and flushing with an acidic solution, followed by placement of treated soil in the original excavation trench where natural aeration would be supplemented by tilling and compaction.

The remedy selected for groundwater in the ROD consisted of extraction of contaminated groundwater above health based levels specified in the ROD (summarized in Table 1 below), treatment by filtration and ion exchange on site, and discharge of treated groundwater to a stream located southwest of the site or to wastewater/private treatment facility such as the City of Cayce's Publicly Owned Treatment Works (POTW) via a nearby sewer line.

Table 1 - Cleanup Goals specified in the 1987 ROD

Contaminant	Groundwater	Soil	
	Standard or Criteria (µg/L)	ATSDR based cleanup level (mg/kg)	Health based cleanup level (mg/kg)
Arsenic	50*	200	<1
Chromium	50*	--	627
Copper	1,000**	--	not a health risk

Notes:

* Safe Drinking Water Act criteria

**Based on taste and odor effects

µg/L = micrograms per liter

mg/kg = milligram per kilogram

On September 21, 1993, EPA approved an Explanation of Significant Differences (ESD).

1. Changes to the soil remedy

The ESD reflected that in 1988, EPA conducted national studies that revealed that flushing soils with a solution containing acidic water and sodium metabisulfite would reduce the chromium in the soils to a trivalent state. Based on these studies, EPA determined during the RD stage that flushing the soils with an acidic water/sodium metabisulfite solution would be a more effective and cost efficient remedy for the Site than washing the soils with an acidic water solution alone. The ESD also called for solidification and stabilization of the contaminated soils after chromium was reduced by the acid water/sodium metabisulfite solution. Use of this alternative was also deemed beneficial in that significant time would be saved in the design stage.

EPA began the remediation for the soil (OU-1) on September 30, 1988 using Superfund monies. EPA's contractor excavated, treated, solidified and replaced 12,688 cubic yards of soil, eliminating the potential for off-site contaminant migration. EPA completed this portion of the cleanup on February 8, 1989.

2. Changes to the groundwater remedy

Based on national pilot tests of three treatment plants (with flow rates of 25 gallons per minute) utilizing the ferrous iron method of heavy metal reduction and precipitation and a pilot study conducted at the Site, EPA prepared and signed an ESD in September 1993 which determined that the ferrous iron system rather than the ion exchange system would be the best system for the reduction and precipitation of heavy metals in the groundwater at the Site. The results of Palmetto Wood pilot study indicated that discharge of the treated groundwater from the ferrous iron system would be in full compliance with provisions of the Sewer Use Ordinance of the City of Cayce, the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (Public Law 95-217), the General Pretreatment Regulations for existing and new sources of pollution (40 CFR Part 403), and other applicable regulations promulgated and adopted by SC DHEC and the City of Cayce. The results also indicated that the system allowed for the identification of the characteristics of the waste sludge.

In addition, the ESD noted that this treatment system produces a non-hazardous sludge. Thus, operating costs for the aquifer remediation system should be substantially less over the life of the project for disposal of non-hazardous metal sludge as opposed to hazardous metal sludge.

The plans for the ground water remediation included the installation of the extraction system, water treatment system and discharge system. The extraction system is comprised of four recovery wells, five extraction wells, eight monitoring wells, an influent line, and a leak detection system. The Water Treatment System (WTS) consisted primarily of the Water Treatment System building, associated treatment equipment, and influent and effluent tanks. The disposal system consisted of the effluent line and the City of Cayce main tie-in.

The Construction Phase of the project was initiated with mobilization on February 26, 1996 and concluded with the 7-day operational performance test on October 15, 1996 which signified substantial completion and the start of the Operational and Functional (O&F) period. The O&F period is often referred to as a "shakedown" period when the construction contractor makes minor adjustments as necessary to ensure the remedy is operating as designed.

The Final Inspection and Acceptance of the project was conducted on May 20, 1997. The Preliminary Close Out Report was signed by EPA on September 30, 1997. The Long-Term Response Action phase began on October 1, 1997. (Long Term

Response Action is the operation of groundwater or surface water treatment systems for a period of up to ten years after the remedy becomes operational and functional).

In September 2002, during the second five year review of the remedy, a review of the applicable or relevant and appropriate requirements (ARARs) revealed that the MCLs for three of the contaminants of concern had been modified. The changes in MCL values for ARARs identified in the 1987 ROD are shown in Table 2 below and are adopted in this document.

Table 2 – Changes in ROD specified Cleanup Goals

Contaminant	SDWA MCL		SC State MCL	
	1987	Current	1987	Current
Arsenic	50	10	50	50
Chromium	50	100	---	100
Copper	1000	1300	----	1300
Note: all units are in micrograms per liter (ug/l)				

3.0 COMMUNITY PARTICIPATION

The public participation responsibilities set out under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund; Pub. L. No. 96-510), as amended at Pub. L. No. 99-499, and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) have been met. Public participation activities prior to the issuance of this AROD included an AROD public meeting in April 2008, and the distribution of proposed plan fact sheets in March 2008. Copies of all project documents are available in the Administrative Record file in US EPA's Region 4 office in Atlanta, Georgia and at the Lexington County Main Library on Augusta Road in Lexington. The notice of the availability of these documents was published in The State Newspaper on March 27, 28, and 30, 2008. The public meeting was held on April 3, 2008. The public comment period began on March 24, 2008 and concluded on April 23, 2008.

4.0 SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The 1987 Record of Decision specified remedies for both the contaminated soil and the contaminated groundwater at the Site. However, post-ROD, the decision was made to divide the site into two operable units (OUs), with OU 1 representing the soil remedial action, and OU 2 representing the groundwater remedial action.

This AROD selects an action that will remediate groundwater contamination above amended cleanup goals noted in Table 2. This action will be implemented under remedial authorities under CERCLA, as amended at Pub. L. No. 99-499. Ingestion of water extracted from the plume poses a current and potential future risk to human health because concentrations of contaminants are greater than the maximum contaminant levels (MCLs) for drinking water (as specified in the Safe Drinking Water Act). This final action will prevent current or future exposure to groundwater contamination above concentrations noted in Table 2.

5.0 BASIS FOR THE DOCUMENT

In 1996, the pump and treat system went into operation. The system was designed to prevent further migration of the groundwater contaminant plume and to extract and treat 7,800 gallons per hour of contaminated groundwater from nine extraction wells that were installed in the plume.

The WTS was successful in greatly reducing the lateral and vertical extent of the chromium plume. However, routine monitoring of the extraction wells in 2004 revealed that the chromium concentrations had either reached cleanup goals or stabilized near 150 ug/l. Table 3 below shows the chromium concentrations in the extraction wells over time.

Table 3 – Chromium Concentrations Over Time (ppb)

RECOVERY/ EXTRACTION WELLS	DEC '96	DEC '97	OCT 2000	OCT 2002	FEB 2004
RW01DP	880	520J	270	190	160
RW02SH	880	480J	340	190	270
RW03DP	1300	900J	580	360	280
RW04SH	160	160	160	170	120
EW01DP	6J	NA	NA	NA	NA
EW02DP	890	530J	210	140	120
EW03DP	1600	1100J	310	180	160
EW04DP	1100	610J	220	120	100
EW05DP	830	410J	230	130	110
EW06DP	460	340J	210	150	110

The pump and treat system was subsequently shut down in July 2004. Subsequently, EPA Region 4 requested the assistance of EPA ERT to examine other groundwater remediation alternatives.

ERT conducted extensive sampling in October 2004 and March 2005 and studied historical quarterly groundwater sampling data to evaluate transient variations in water quality. ERT concluded in June 2005 that 1) the pump and treat system had reached its maximum chromium extraction potential, and continued groundwater

extraction would not significantly improve groundwater quality and 2) the chromium levels had stabilized and possibly reached steady state levels. ERT recommended that the chromium levels may be further reduced by in situ reaction zone reduction treatment methods that require the introduction of a reductant into the aquifer that would act as an electron donor to reduce chromium (VI) to the stable and benign trivalent chromium. The trivalent chromium would precipitate out of the groundwater, thereby reducing the concentration of chromium in the groundwater.

The site hydrogeology was reviewed to determine if there is sufficient permeability and conductivity in the aquifers to expect that the recommended remedy would be successful. ERT, in January 2005 reported that the shallow aquifer has an average thickness of 50 feet with the water table occurring at about 30 feet below the ground surface (bgs). The shallow aquifer has a horizontal gradient of 0.023 foot/foot, with an estimated hydraulic conductivity of 180 feet/day. The horizontal gradient for the deep aquifer is 0.005 foot/foot and the estimated hydraulic conductivity is approximately 20 feet/day. The site data and conditions suggest that the recommended remedy would be effective.

As described further under Section 7, a pilot study was conducted to assess the potential effectiveness of introducing a reductant into the aquifer that would act as an electron donor to reduce chromium (VI) to the stable and benign chromium (III). The results of this study are reported in the following document: "Final In Situ Anaerobic Bioremediation Groundwater Pilot Study and Soil Treatment Report of Findings, Palmetto Wood Preserving Site, Dixiana, Lexington County, South Carolina," Black & Veatch Special Projects Corp. (January 2008). This document is in the Site's Administrative Record.

6.0 SITE CHARACTERISTICS

Based upon the ERT recommendations, a comprehensive groundwater sampling effort was launched to support the conduct of a pilot study of an in-situ groundwater remediation technology. Samples were collected from shallow and deep monitoring wells and extraction wells to update the contaminant plume location, size, and concentration. Table 4 shows the chromium concentrations from the extraction wells and Figures 4 and 5 depict the shallow and deep groundwater contaminant plumes respectively. In addition, the recovery wells and selected monitoring wells were also analyzed for copper and arsenic, the contaminants whose MCL changed from levels given in the 1987 ROD. These results are presented in Table 5.

Table 4 – Chromium Concentrations – Extraction Wells (ppb)

RECOVERY/ EXTRACTION WELLS	FEB 2004	MARCH 2005	AUGUST 2007
RW01DP	160	ND	48
RW02SH	270	ND	ND
RW03DP	280	5.9	28J
RW04SH	120	240	270J
EW01DP	NA	ND	NA
EW02DP	120	22	12J
EW03DP	160	97	73J
EW04DP	100	38	33J
EW05DP	110	210	110J
EW06DP	110	34	59J

Table 5 – Copper and Arsenic Concentrations – August 2007

WELL LOCATION	COPPER (MCL – 1300 PPB)	ARSENIC (MCL – 10 PPB)
RW01DP	ND	ND
RW02SH	6.9R	ND
RW03DP	7.3R	ND
RW04SH	5.7R	ND
EW02DP	11J	ND
EW03DP	94J	ND
EW04DP	27J	ND
EW05DP	12J	ND
EW06DP	9.2J	ND
GMW13S	ND	ND
GMW13D	ND	ND
GMW14S	ND	5.1J
GMW14D	ND	ND
GMW15S	ND	ND
GMW15D	ND	ND
GMW16D	ND	ND
GMW17D	ND	ND

J – estimated value ND – non detect R - rejected

7.0 EVALUATION OF ALTERNATIVE GROUNDWATER REMEDY

Based upon the data, EPA set out to determine the best approach for completing the groundwater remedy. Several options were considered including restarting the groundwater extraction system, allowing the plume to naturally attenuate, or implementation of an in-situ cleanup remedy. The in-situ remediation technologies potentially applicable that were identified and evaluated included the following:

FIGURE 4 – SHALLOW CHROMIUM (VI) PLUME

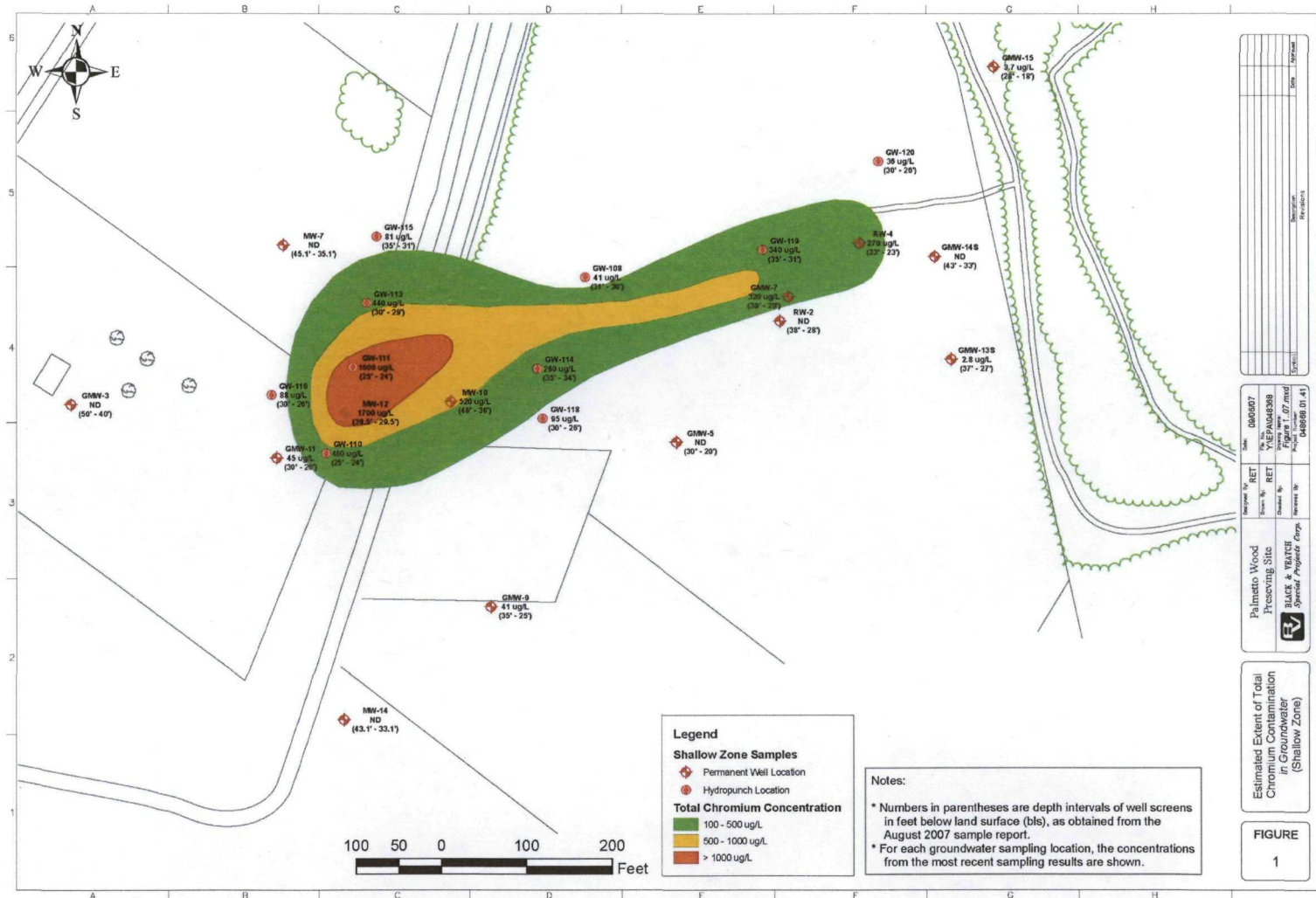
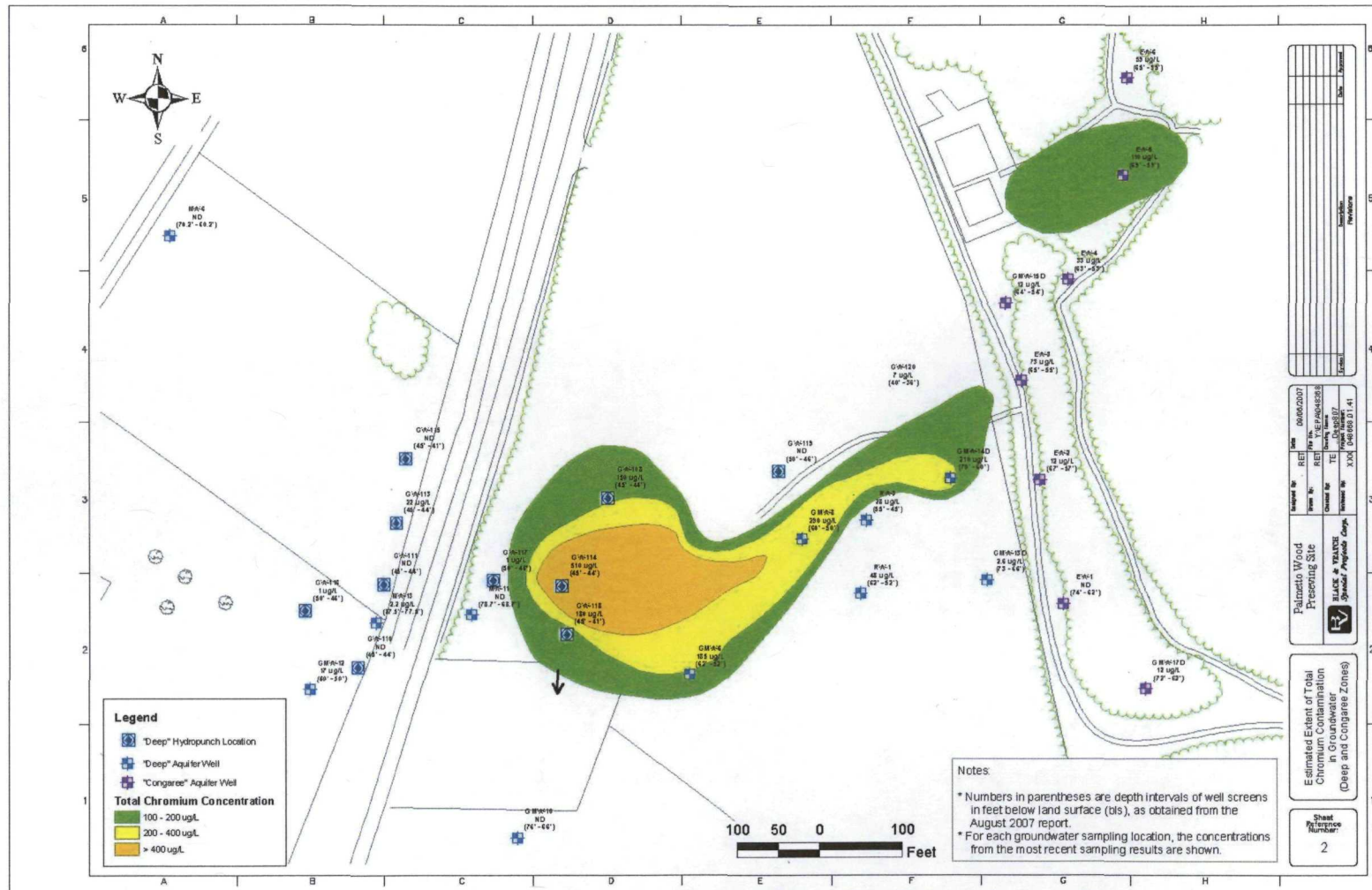


FIGURE 5 – DEEP CHROMIUM (VI) PLUME



- Geochemical Fixation/Immobilization
 - Pump & Treat (P&T) with chemical reduction and re-injection
- Flushing/enhanced extraction
 - Injection of aqueous solution in contaminated area with P&T
- Electrokinetics
 - Use of electrodes and electric charge to separate and extract heavy metals from saturated/unsaturated soil
- Permeable Reactive Barriers (PRBs)
 - Chemical reduction and fixation (reactive media)
 - Chemical reduction and fixation
 - Adsorption and chemical reduction (zeolites/zero valent iron)
- Reactive zones
 - Chemical reduction and fixation (reactive agent)
 - Bioreduction (In-situ Anaerobic Bioremediation (ISAB) with carbon substrate)
 - Bioprecipitation
 - Biomineralization
- Natural attenuation
- Phytoremediation
 - Use of plants for uptake of contaminants

Based on an evaluation of available remedial technologies and the site data and conditions, the decision was made to use Reactive Zones installed as permeable treatment walls using ISAB for the pilot study technology to address the remaining chromium groundwater contaminant plume at the site.

The most recent reported chromium concentrations in the impacted groundwater are 1,700 µg/L or less, which is an appropriate level for biological remediation. The native microbial community should be available for the bioreduction of chromium in groundwater, as groups of microorganisms are capable of directly or indirectly reducing chromium (VI) to chromium (III) are ubiquitous. Two carbon sources, e.g. emulsified vegetable oil and sodium lactate, were injected along with a pH moderating reagent, to create a suitable pH and Oxygen Reduction Potential (ORP) condition to promote the biological reduction of chromium in the plume.

The objectives of the ISAB pilot study for the groundwater contamination were as follows:

- Determine the effectiveness of ISAB in reducing total chromium concentrations below the 100 µg/L MCL in the shallow and intermediate groundwater zones over a period of three months.
- Evaluate the short-term effectiveness of a slow release carbon substrate, such as emulsified oil, and a fast release carbon substrate, such as lactate, in achieving the total chromium cleanup level over a period of three months.
- Evaluate the effectiveness of pH adjustment to the neutral range on the stability of reduced chromium (III) species.
- Determine whether the formation of reducing conditions from implementation of ISAB leads to the mobilization of arsenic and/or manganese.

Chromium can be removed from the groundwater by naturally occurring processes. One of these involves the electrochemical reduction of highly soluble chromium (VI) to chromium (III), which is much less soluble in water. As a result, chromium (III) will be precipitated on aquifer solids, resulting in reduced groundwater concentrations of chromium and reduced risk. Moreover, chromium (III) is much less toxic than chromium (VI).

Dilute sodium lactate was injected into the area of monitoring well MW-12 via direct push technology (DPT). However, this injection did not alter the geochemical condition of the groundwater significantly. No clear trend was observed for dissolved oxygen content (DOC), sulfate, nitrate, or methane concentrations in MW-12 from the baseline event to the post injection monitoring events. No metabolic acid concentration increases have resulted from the injection of sodium lactate in the MW-12 area. Without successfully adjusting the groundwater oxidation-reduction condition, the chromium concentrations (both dissolved and total) did not show any decreasing trend but just fluctuated around the baseline level of 600 µg/L dissolved chromium and 660 µg/L total chromium (Table 6).

The MW-10 area was injected with emulsified vegetable oil via DPT. The data in Table 6 clearly showed the positive effects of EOS injection. As a consequence of the reduced oxidation-reduction potential and establishment of anaerobic reducing conditions, chromium concentrations reached the treatment goal of below 100 µg/L during the first month post injection sampling event, for both dissolved chromium and total chromium. This decreasing trend continued throughout the 3-month monitoring period, with non-detects for both dissolved and total chromium in the last sampling event in June 2007.

The injection of sodium lactate at MW-12 was not successful at treating the chromium contamination in that area. Groundwater treatment pilot study results

indicated that the EOS injection at MW-10 was very effective at enhancing the biological reduction of chromium and achieving the MCL for total chromium.

TABLE 6 PILOT STUDY RESULTS

Well	Contaminant	Baseline	1 st month post injection	2 nd month post injection	3 rd month post injection
MW-10 (EOS)	Chromium (dissolved ug/l)	500	76J	5.3	ND
	Chromium (total ug/l)	470	93	13	ND
MW-12 (SODIUM LACTATE)	Chromium (dissolved ug/l)	600	700	1500	530J
	Chromium (total ug/l)	660	630	1600	400

Based on the positive results of the ISAB pilot test and the knowledge of site-specific surface and subsurface features and hydrogeological characteristics, a full scale ISAB alternative is recommended to induce reduced groundwater conditions and treat total chromium to levels below the MCL across the entire plume by installing several permeable treatment walls into the shallow and deep groundwater zones (Figure 5).

A long-lasting substrate that will continuously release fermentable carbon as a hydrogen and energy source to maintain anaerobic reducing conditions for a 3 to 5 year period will be needed. The substrate will be emplaced into the subsurface using one trenched permeable treatment wall and several injected permeable treatment walls. Two primary processes will occur that result in the reduction of soluble chromium (VI) to an insoluble and kinetically stable species of chromium (III). First, groundwater impacted with chromium (VI) will migrate through the permeable treatment walls, and be reduced to chromium (III) in the process due to the reducing environment induced by the degradation of the carbon substrate. Secondly, the carbon substrate will release soluble fatty acids that will migrate downgradient of the treatment walls via advective groundwater flow. The fatty acids will in turn create reducing conditions and in the process reduce the chromium (VI) to insoluble species of chromium (III). The spacing between the permeable treatment walls is expected to treat the entire chromium ~~(VI)~~ plume using the two processes previously described within an estimated 3 to 5 year duration. Portions of the plume located in closer physical proximity to the treatment walls will be treated in a shorter duration (i.e. less than one year), as evidenced during the pilot test.

8.0 EVALUATION CRITERIA

As required, EPA evaluated the technology using the nine criteria listed in section 300.430 of the NCP. Two of the nine criteria, overall protection of human health and the environment and compliance with ARARs, are threshold criteria. If a technology does not meet these two criteria, it cannot be considered as the Site remedy. Five of the criteria are balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume of contaminants through treatment; short-term effectiveness; implementability; and cost. The EPA can make tradeoffs with respect to the balancing criteria. Two of the criteria are modifying criteria, state/support agency acceptance and community acceptance.

Overall Protection of Human Health and the Environment

This criterion determines whether a technology eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. This is a threshold criterion.

Human and ecological receptors are protected from adverse effects of exposure to chemicals when chemicals are absent. Thus, risk of exposure to contaminants can be completely eliminated by removing contaminants from a site. The pilot study demonstrated that the ISAB technology removes chromium from the groundwater.

Compliance with ARARs

This criterion addresses whether or not a technology is expected to meet any identified "applicable" or "relevant and appropriate" federal or more stringent state environmental laws or regulations (i.e., ARARs) under CERCLA Section 121(d). Alternatively, it will evaluate whether a waiver of an ARAR can be invoked under CERCLA Section 121(d)(4).

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site.

Only those promulgated state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable (40 C.F.R. Part 300.5). Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or

situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Similarly, only those promulgated state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate (40 C.F.R. Part 300.5).

Chemical-specific ARARs - In general, chemical-specific ARARs can be met most effectively by removing contaminant mass from a site. Contaminant removal can be achieved with the ISAB technology. Therefore, federal and state MCLs will be met.

Location-specific ARARs - Meeting location-specific criteria might be achieved by having minimal to negligible impact on important elements of the physical environment at and surrounding the Site.

Action-specific ARARs - The action-specific criterion relate to limitations or parameters by which a particular remedial action is to be implemented. As such, the technology will achieve the action-specific criteria by meeting the substantive requirements of the underground injection control permit during the pre-construction phase of the project.

Long-Term Effectiveness and Permanence

The long-term effectiveness and permanence of a technology describes how well the technology maintains its level of protection of human health and the environment (the first threshold criterion) and its attainment of ARARs (the second threshold criterion) over time. The ISAB provides long-term effectiveness and permanence with respect to protection of human health and the environment by permanently reducing chromium concentrations in groundwater.

Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment

Reduction of Toxicity, Mobility or Volume (T/M/V) describes in more detail the mechanism(s) by which a technology attains the level of protection of human health and the environment (the first threshold criterion) and the attainment of ARARs (the second threshold criterion). The ISAB is expected to reduce the toxicity, and mobility of contamination by reducing the more toxic chromium(VI) concentrations to the less toxic and less mobile chromium(III) across the entire plume thereby reducing the chromium concentrations in the groundwater.

Short-Term Effectiveness

The short-term effectiveness of remedial alternatives relates to how well a technology achieves a level of protection of human health and the environment (the first threshold criterion) and attains ARARs (the second threshold criterion) during implementation or installation of the remedial alternative. In some cases,

implementation of a technology could temporarily increase risk and exposure pathways to receptors. Short-term risks would be mitigated by developing, implementing, enforcing, and monitoring a site-specific health and safety plan. It is estimated that implementation of the plan will require approximately 6 months including the planning phase, with follow-on monitoring for a period of 4.5 years.

Implementability

Implementing a technology involves design, planning, construction or installation, and operation of the various machinery and human components of remedial technologies. The efficiency with which a technology can be installed and operated impacts how well it achieves its level of protection (the first threshold criterion) and attains ARARs (the second threshold criterion). In some cases, implementation could be technically difficult or impossible given site-specific limitations. The ISAB technology is technically and administratively implementable. The equipment needed is readily available, and the technology for the plan has already been proven successful during the pilot study.

Cost

This criterion evaluates the estimated capital and O&M costs as well as present worth costs. Present worth costs are the total costs of an alternative over time in terms of today's dollars (i.e., present worth costs correct for expected inflation). The cost estimates are expected to be accurate within a range of +50 to -30 percent. The ISAB plan was designed to utilize a cost effective technology that is capable of achieving the required levels of protection for human health and the environment. The cost analysis is presented in table 7.

State/Support Agency Acceptance

This criterion considers whether the state agrees with the EPA's analyses and recommendations of the Proposed Plan. This is a modifying criterion. The SC DHEC supports the change in remedy.

Community Acceptance

This criterion considers whether the local community agrees with the EPA's analyses and remedy change. Comments received on the Proposed Plan are important indicators of community acceptance. This is a modifying criterion. No comments on the proposed plan were received from the community.

9.0 SIGNIFICANT DIFFERENCES

The current plan, which was adopted in September 1987, modified in September 1993, and became operational and functional in 1997 involves:

- Extraction of contaminated groundwater
- Treatment of extracted groundwater by the ferrous ion method of heavy metal reduction and precipitation
- Discharge of treated groundwater to the City of Cayce's POTW.
- Thirty years of groundwater monitoring

Groundwater cleanup cost to date: approximately \$3.51 million.

The amended plan is similar to the existing cleanup plan because it would achieve the cleanup goal of 100 parts-per-billion (ppb) for chromium in groundwater, and it would protect human health and the environment over the long term. The main difference is the amended plan would utilize in-situ anaerobic bioremediation to address the remaining chromium groundwater contaminant plume.

The amended plan includes:

- Installation of trenched and direct push permeable treatment walls
- Injection of substrate using In-Situ Anaerobic Bioremediation (ISAB) for the treatment of chromium
- Five (5) Years of Groundwater Monitoring

Estimated cost: \$1.37 million

10.0 PRINCIPAL THREAT WASTES

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP §300.430(a)(1)(iii)(A)). Identifying the principal threat waste combines concepts of both hazard and risk. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile, which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur.

The groundwater, contaminated with chromium at significant levels, is considered to be "principal threat wastes" because chromium concentrations are present that pose a significant risk under any exposure scenario. Contaminated groundwater will be treated in-situ.

11.0 SELECTED REMEDY

Based on the positive results of the ISAB pilot test and the knowledge of site-specific surface and subsurface features and hydrogeological characteristics, a full scale ISAB alternative was selected to induce reduced groundwater conditions and treat total chromium to levels below the cleanup goal across the entire plume by installing several permeable treatment walls into the shallow and deep groundwater zones. A preliminary design was conducted to estimate cost (Figure 7).

The full-scale system would entail utilizing a long-lasting substrate that will continuously release fermentable carbon as a hydrogen and energy source to maintain anaerobic reducing conditions for a 3 to 5 year period. The anticipated design, construction and operational aspects associated with this selected remedy are described below. These currently anticipated design, construction and operational aspects of this selected remedy may change during design, construction or operation of the selected remedy. The substrate will be emplaced into the subsurface using one trenched permeable treatment wall and several injected permeable treatment walls.

Institutional controls will be added to all properties where the groundwater contamination from the site exceeds the cleanup goals as revised through this amended ROD. Restrictions on the use of groundwater are necessary because the concentrations of hazardous substances in the groundwater will not immediately allow unlimited use and unrestricted exposure.

The cost estimate assumes that emulsified vegetable oil substrate will be used within the treatment walls. The remedial design may assess whether a different substrate is preferable within the treatment walls. The total projected cost to implement the full-scale in situ anaerobic bioremediation alternative and conduct 5 years of groundwater monitoring and reporting, which is the estimated time to achieve the chromium MCL across the plume, is shown in Table 7.

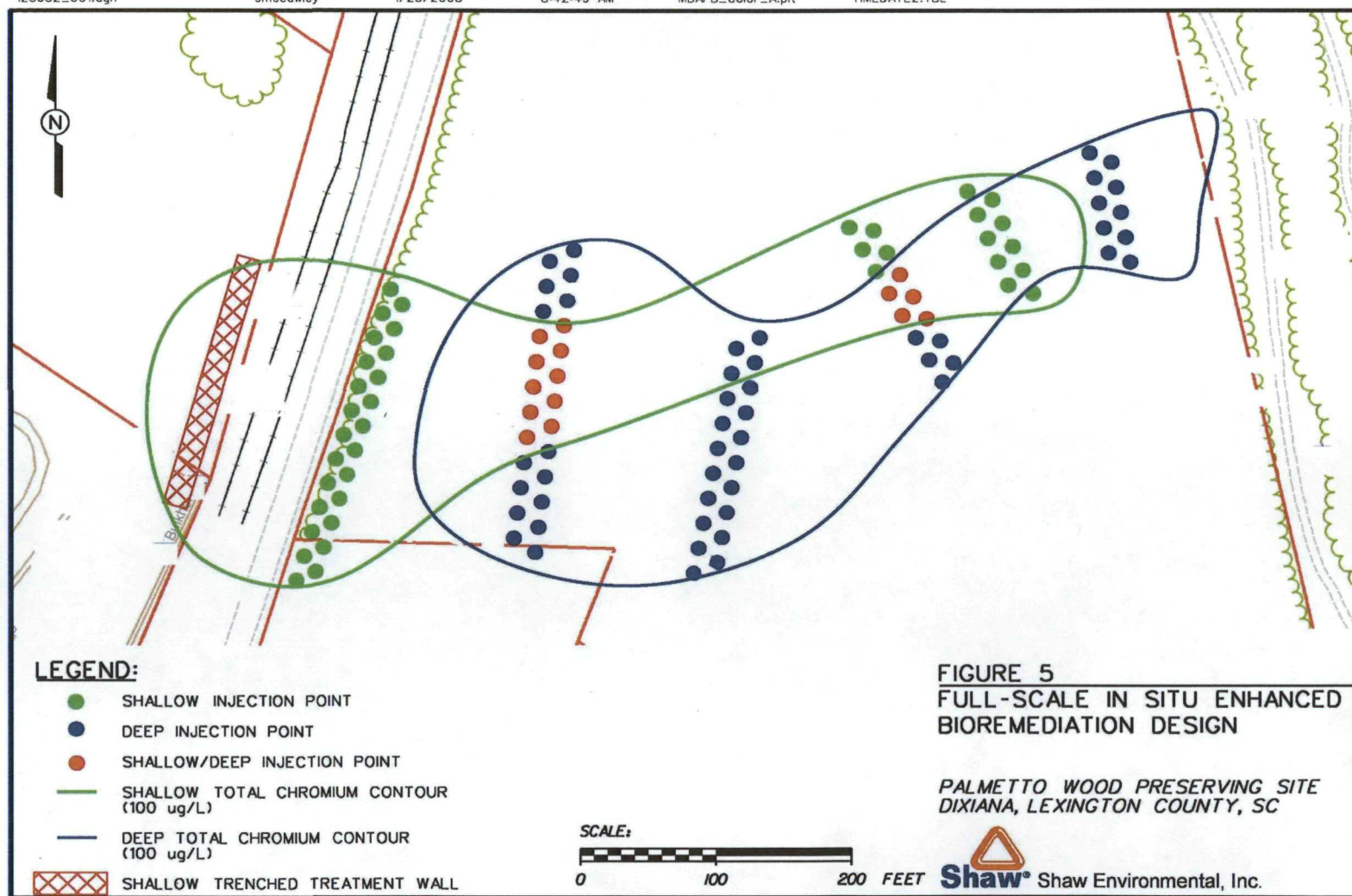


Figure 6

TABLE 7 INSITU ANAEROBIC BIOREMEDIATION			PRESENT WORTH COST DISCOUNT RATE: 7%	
ITEM DESCRIPTION	UNITS	QUANTITY	UNIT PRICE DOLLARS	TOTAL COST DOLLARS
CAPITAL COSTS				
CONSTRUCTION				
Monitor Well Installation and Development	Each	3	\$6,943	\$20,829
Trenched Treatment Wall Installation	Each	1	\$170,800	\$170,800
DPT Permeable Treatment Wall Installation	Each	6	\$41,492	\$248,950
Resident Engr Oversight & Data Evaluation	Lump Sum	1	\$136,000	\$136,000
Subtotal – Capital Cost				\$576,579
Contingency Costs (25% of Capital Cost)				\$144,145
TOTAL CONSTRUCTION COST				\$720,724
Administrative Costs (Project Planning, Design, and Subcontract Procurement)				\$135,958
Present Worth – O&M, O&M Reporting, & Subcontract Management (ISAB – 5 years)				\$267,671
Community Relations Support				\$31,182
Present Worth – Water Treatment System O&M (5 years)				\$215,354
TOTAL PRESENT WORTH COST				\$1,370,888

12.0 STATUTORY DETERMINATIONS

Under CERCLA §121 and the NCP, U.S. EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for this site must comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws, unless a statutory waiver is justified. The selected remedy also must be cost effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for treatment as a principal element of the remedy. The implementation of the selected remedy at the Palmetto Wood Site satisfies these requirements of CERCLA Section 121 as discussed below.

12.1 Overall Protectiveness of Human Health and the Environment

The selected remedy at this site will be protective of human health and the environment through treatment, containment, engineering controls, and/or institutional controls (NCP §300.430(f)(5)(ii)). Reduction of contaminants in the groundwater to below the drinking water MCLs, by treatment, will return the groundwater to beneficial use and reduce the risk level. Institutional controls will prevent exposure to contaminated groundwater during implementation of the remedy.

12.2 Compliance with Applicable or Relevant and Appropriate Requirements

The Federal and State ARARs which are relevant to the Palmetto Wood Site and the selected remedy are presented in Tables 8, 9, and 10. The selected remedy will comply with all ARARs in these tables.

Table 8
Chemical-Specific ARARs

Standard, Requirement, or Criterion	Citation	Description
WATER REGULATIONS (Safe Drinking Water Act - 40 USC ' 300; Clean Water Act - 33 USC Section 1251-1376)		
Federal Groundwater Classification	55 FR Part 8733	Federal classification system to establish groundwater usage categories for aquifers as part of a groundwater protection strategy.
National Primary Drinking Water Regulations	40 CFR 141.61	Establishes maximum contaminant levels (MCLs) for specific chemicals to protect drinking water quality.
South Carolina MCLs in Drinking Water	R.61-58.5	Establishes maximum contaminant levels (MCLs) for specific chemicals to protect drinking water quality.

Notes: CFR - Code of Federal Regulations MCL - Maximum Contaminant Level

Table 9
Location-Specific ARARs

Standard, Requirement, or Criterion	Citation	Description
Fish and Wildlife Coordination Act	16 U.S.C. Sections 661 to 667e	The Act allows the Department of Agriculture and Commerce to assist Federal and State agencies to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife.
Noise Control Act of 1972	42 USC Sect. 4901 et seq.	Federal activities must not result in noise that will jeopardize the health or welfare of public.
Protection of Wetlands	(Executive Order 11990; 40CFR 6.302 (a); 40 CFR Part 6, Appendix A)	Requires federal agencies to take action to avoid adversely affecting wetlands, to minimize wetlands destruction, and to preserve the value of wetlands.

Notes: USC - United States Code CFR - Code of Federal Regulations

Table 10
Action-Specific ARARs

Standard, Requirement, or Criterion	Citation	Description
Underground Injection	SC Underground Injection Control Regulations (R.61-87)	Requirements for controlling underground injection in the state of South Carolina
Installation of Monitoring Wells	SC Well Standards (R.61-71)	Requirements for installation of wells

12.3 Cost Effectiveness

This section explains how the selected remedy meets the statutory requirement that all Superfund remedies be cost effective. A cost-effective remedy in the Superfund program is one whose "costs are proportional to its overall effectiveness" (NCP §300.430(f)(1)(ii)(D)). The "overall effectiveness" is determined by evaluating the following three of the five balancing criteria used in the detailed analysis: (1) Long-term effectiveness and permanence; (2) Reduction in toxicity, mobility, and volume; and (3) Short-term effectiveness. "Overall effectiveness" is then compared to cost to determine whether a remedy is cost-effective (NCP §300.430(f)(1)(ii)(D)).

An evaluation was made regarding the overall protectiveness of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction in toxicity, mobility, and volume through treatment, short-term effectiveness, and implementability of the selected alternative. The cost-effectiveness determination focuses on long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. The selected remedy is considered cost effective because it is a permanent solution that reduces human health and ecological risks to acceptable levels at less expense than other permanent, risk reducing alternatives. The remedy was designed to utilize cost effective technologies that are capable of achieving the required levels of protection for human health and the environment.

12.4 Utilization of Permanent Solutions to the Maximum Extent Practicable

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized at the Site.

The Selected Remedy provides a balance in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element, and considering State and community acceptance. The Selected Remedy treats the contaminants in groundwater. It satisfies the criteria for long-term effectiveness by removing the contaminants from the groundwater. The Selected Remedy does not present short-term risks and there are no special implementability issues.

12.5 Preference for Treatment as a Principal Element

EPA has determined that the ISAB of the contaminated groundwater will meet the statutory preference for the selection of a remedy that involves treatment as a principal element.

12.6 Five-Year Review Requirement

Restrictions on the use of groundwater are necessary because the concentrations of hazardous substances in the groundwater will not immediately allow unlimited use and unrestricted exposure. This site's groundwater is expected to eventually reach cleanup goals and thus the groundwater would have unlimited use and unrestricted exposure. However, because this site's soil remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted to ensure that the remedy provides adequate protection of human health and the environment.

The 3rd five year review of the Palmetto Wood site was completed in September 2007. The 4th will be completed no later than September 2012.

13.0 RESPONSIVENESS SUMMARY

During the public comment period for the proposed plan, citizens that attended the April 3, 2008 public meeting expressed concern for their private well water and requested that the wells be sampled. SC DHEC followed up this meeting with an April 15, 2008 letter requesting that the residential wells continue to be sampled as part of the periodic monitoring program associated with the proposed remedy. As a result, the three private wells were sampled April 28, 2008 and they will be included in the periodic sampling plan.

APPENDIX A STATE CONCURRENCE LETTER

BOARD:
Paul C. Aughtry, III
Chairman
Edwin H. Cooper, III
Vice Chairman
Steven G. Kisner
Secretary



C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment

BOARD:
Henry C. Scott
M. David Mitchell, MD
Glenn A. McCall
Coleman F. Buckhouse, MD

July 25, 2008

Mr. Franklin Hill, Director
Superfund Division
U.S. EPA, Region IV
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303

Re : Concurrence with Amendment to the 1987 Record of Decision
Palmetto Wood Preserving National Priorities List Superfund Site,
Dixiana, South Carolina

Dear Mr. Hill:

The Department has reviewed and concurs with all parts of the Amendment to the 1987 Record of Decision (ROD), dated June 2005 for the Palmetto Wood Preserving Superfund Site located in Dixiana, Lexington County, South Carolina.

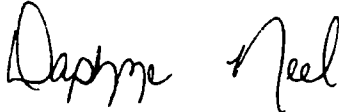
It is the Department's understanding that the purpose of the Amended ROD is to highlight a change to the remedy from pump and treat to an in-situ anaerobic bioremediation treatment remedy where substrate is injected into the groundwater and contamination is treated in place. The Department understands that this amendment is necessary because it will achieve cleanup goals faster than the original plan, it is equally protective in the long term, and it is more cost effective than the original plan.

In concurring with this Amended ROD, the South Carolina Department of Health and Environmental Control (SCDHEC) does not waive any right or authority it may have under federal or state law. SCDHEC reserves any right or authority it may have to require corrective action in accordance with the South Carolina Pollution Control Act. These rights include, but are not limited to, the right to ensure that all necessary permits are obtained, all clean-up goals and remedial criteria are met, and to take separate action in the event clean-up goals and remedial criteria are not met. Nothing in the concurrence shall preclude SCDHEC from exercising any additional administrative, legal and equitable remedies available to require additional response actions in the event that: (1)(a) previously unknown or undetected conditions arise at the site or (b) SCDHEC receives information not previously available concerning the premises upon which SCDHEC relied in concurring with the selected alternative; and (2) the implementation of

the remedial alternative selected in the Amended ROD is no longer protective human health or the environment.

If you should have any questions regarding the Department's concurrence with the Amended ROD, please contact Tim Hornosky at (803) 896-4017 or Van Keisler at (803) 896-4014.

Sincerely,

A handwritten signature in cursive script, reading "Daphne Neel".

Daphne Neel, Chief
Bureau of Land and Waste Management
South Carolina Department of Health
and Environmental Control

cc : Keith Lindler, BLWM
Ken Taylor, BLWM
Van Keisler, BLWM
Tim Hornosky, BLWM
Harry Mathis, Region 3 EQC (Columbia)
file # 50958

APPENDIX B

PUBLIC MEETING TRANSCRIPT

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- - -
PALMETTO WOOD PRESERVING SITE
RECORD OF DECISION (ROD) AMENDMENT
PUBLIC MEETING
- - -

DATE: April 3, 2008
TIME: 7:03 p.m.
LOCATION: 212 South Lake Drive
Lexington, SC

REPORTED BY: ANGELA D. ZUVER,
Court Reporter

A. WILLIAM ROBERTS, JR., & ASSOCIATES
Fast, Accurate & Friendly
Charleston, SC Hilton Head, SC Myrtle Beach, SC
(843) 722-8414 (843) 785-3263 (843) 839-3376
Columbia, SC Greenville, SC Charlotte, NC
(803) 731-5224 (864) 234-7030 (704) 573-3919

ORIGINAL

1 APPEARANCES:

2 Linda Starks
Giezelle Bennett
3 Tarek Ladaa
Tim Eggert
4 Chuck Williams
Donna Moye
5 Tim Hornosky
Barbara Spigner
6 Richard Spigner
James Kaminer
7 Doris Kaminer
Chuck Whipple

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1 MS. STARKS: Good evening, everybody.
2 My name is Linda Starks, and we're here for the
3 proposed plan meeting -- well, proposed revised
4 plan meeting. EPA and DHEC are proposing to revise
5 the clean up plan for the ground water at Palmetto
6 Wood Preserving Site. In this case, EPA and DHEC
7 propose to change the ground water clean up plan
8 because it will achieve clean up goals faster than
9 the original plan. This meeting will give you an
10 opportunity to understand the proposed revisions to
11 the original plan and to voice your opinions and
12 concerns.

13 EPA will have a public comment period.
14 You can either comment now or, you know, write
15 comments from March 24th to April 23, 2008. If you
16 send a the comment in, they must be postmarked no
17 later than April 23rd.

18 We have a place where we hold the
19 records called the information repository, and
20 that's at the Lexington County Main Library on
21 Augusta Street. So you can find all the records
22 there if you need to read or anything about the
23 site.

24 Now, in this meeting we use a court
25 reporter, if you heard me talk to her earlier.

1 What we need for you to do is listen to the
2 presentation, and at the end of the presentation
3 we'll have a question and answer period. We need
4 for you to speak clearly and for you to state your
5 name so that she can understand it. You might have
6 to spell it.

7 The project manager for this team is
8 Giezelle Bennett. She's the remedial project
9 manager. She's worked on the site for some years.
10 I am the public affairs specialist. I forgot to
11 introduce myself and tell what my job was. Tim
12 Hornosky is the project manager, and Tim Eggert is
13 the Black & Veatch project manager.

14 So, I'll turn it over to Giezelle
15 Bennett at this time, and she'll go through, and at
16 the end, like I said, we'll have questions and
17 answers.

18 MS. BENNETT: As Linda indicated, I am
19 the project manager for this site for the EPA, and
20 the site -- the Palmetto Wood Preserving Site is
21 located near Dixiana Road and Pallet Drive, as you
22 know, in West Columbia, South Carolina.

23 Just a brief history of the site. The
24 site operated from 1963 to 1985. They pressure
25 treated wood by a couple of different methods. The

1 state regulatory agency, South Carolina DHEC,
2 received complaints of green liquids running off
3 the site and pooling nearby from adjacent property
4 owners.

5 EPA conducted an assessment of the site
6 and added to it the national priorities list in
7 1983. This triggered an investigation which
8 resulted in the issuance of a decision document
9 that we call a record of decision, and that
10 selected a clean up method for both soil and ground
11 water, and we did that in 1987.

12 For the soil we selected a
13 solidification/stabilization method, which means
14 that we treated the soil, then mixed it with cement
15 and formed it into monoliths and then buried it on
16 site, and we treated over 12,600 cubic yards this
17 way.

18 This is a depiction of the layout of
19 the site. The orange rectangles are where the
20 monoliths are.

21 For ground water, the remedy that we
22 chose was our traditional pump and treat. The main
23 contaminant that we were cleaning up was chromium.
24 In that treatment, what we do is we extract ground
25 water, treat it, and then discharge it. This

1 officially began in October of 1997. We installed
2 nine extraction wells and we averaged removal of
3 over six million gallons a month.

4 This slide shows a depiction of how the
5 plume appeared way back in 1987, and the square
6 building, notice, is where the treatment building
7 is located.

8 And that's a picture of our lovely
9 treatment building.

10 There's a bigger slide of this on the
11 poster board there, but this is our overall site
12 layout. It shows the physical property, the
13 rectangles, and it also shows the treatment
14 building that I discussed, and the area that we
15 were concentrating on in the dotted lines.

16 Throughout the clean up process we
17 periodically evaluate and make adjustments to our
18 clean up process, and in that evaluation we noticed
19 that the rate of reduction of the levels of
20 chromium had slowed down. The concentration
21 dropped dramatically in the first six years. I put
22 up the levels for one well. It went from 1,600 to
23 180. As you see, that's a big order of magnitude
24 in drop. But in the next two years it only dropped
25 down to 160, and we were trying to get to our clean

1 up level of 100, so we had significantly slowed
2 down in our removal of chromium.

3 So in 2004 we turned off the pumps and
4 we turned to our research group out of New Jersey,
5 and they conducted a study to see if additional
6 ground water remediation was needed. They
7 concluded that the pump and treat had reached its
8 maximum potential and continued extraction would
9 not significantly improve the ground water quality.
10 So they recommended that we change the remedy from
11 pump and treat to an in situ, or in place,
12 treatment.

13 In 2006 and 2007 we did extensive
14 sampling and we did an in situ pilot study. We
15 looked at a number of different ways to treat the
16 ground water in place, and this is just a list of
17 them, from geochemical fixation down to
18 phytoremediation.

19 Based upon our sampling, this is how we
20 think that the ground water plume, or contamination
21 in the ground water, looks now. That's the shallow
22 ground water contamination, which is about 20 to
23 35 feet deep, and this is a depiction of the deep
24 ground water contamination, which is over 40 feet
25 deep.

1 For the pilot study we chose a reactive
2 zone technology, or in situ anaerobic
3 bioremediation, and what we did was we put two
4 different additives in the ground water -- one was
5 a sodium lactate and the other was emulsified
6 vegetable oil -- and we were hoping that that would
7 reduce the levels of chromium in the ground water.
8 One of them was successful. The oil -- the
9 emulsified vegetable oil was successful in reducing
10 the chromium to below our clean up level of 100.

11 So that's our proposed remedy, to
12 change the remedy from pump and treat to a one-time
13 injection of the oil, a bigger injection of it,
14 through a long trench and 80 different injection
15 points, and then we would monitor it over the next
16 five years to determine if it's working or not.

17 This is a depiction of the proposed
18 remedy. The hash mark is the long trench that we
19 would use to put the oil within the ground water
20 and the other dots are the injection points.

21 And just for our remedy comparison, you
22 know, we started out with pump and treat and we
23 want to do an in situ, or in place, treatment. The
24 duration for the pump and treat we estimated would
25 be 30 years from 1997, so we have gone through, I

1 guess, 11 years of that, and the new remedy that we
2 proposed we think would only -- we would only need
3 about five years. For the old one we have spent
4 \$3.5 million to date and the new one we estimate
5 will cost about \$1.4 million over the next five
6 years.

7 The effectiveness for the pump and
8 treat, we consider that fair because it does work,
9 it just takes a long time. And the new one, we
10 consider that good because we think it'll do the
11 same job a lot faster and a lot cheaper.

12 Do we have any questions or any
13 statements? Any comments?

14 Could you state your name?

15 MRS. KAMINER: My name is Doris
16 Kaminer. I was just going to ask a question. My
17 mom lives across the road. How often do you test
18 their well water? Because she's not on city water.
19 She's just on the line over there, but -- do you
20 come out and test the water for her? We don't -- I
21 don't know. She's old. I haven't asked her.

22 MS. BENNETT: Well, we haven't tested
23 any well water. When I talked to the City of
24 Cayce, they indicated that everybody that would be
25 affected by the site was on city water. But we

1 plan on doing another well survey. We haven't done
2 one in quite a while.

3 MR. KAMINER: She probably lives about
4 100 yards --

5 MS. BENNETT: Could you state your
6 name, please.

7 MR. KAMINER: Where the main plant
8 was -- I'm James Kaminer. She lives within 100
9 yards probably of where this treatment plant is.
10 It's on one side of the railroad and she lives
11 right across the street from the other side of the
12 railroad.

13 MS. BENNETT: Could you state your
14 name, please.

15 MR. SPIGNER: I'm Richland Spigner. I
16 stay right across from where the thing is. They've
17 been coming by about every year checking our well
18 water, but they said that where we stay -- we stay
19 right there. They had some of them big wells right
20 there at our mailboxes and stuff, but last year
21 they took some of them up. They've been there for
22 years. They've been testing. They said the water
23 was going the other way, but they still come by and
24 check our well water about every year.

25 MS. BENNETT: Who does that?

1 MRS. SPIGNER: DHEC.

2 MR. SPIGNER: I don't know. See, they
3 used to have this meeting like this down at the
4 church down there and we went to it down there
5 about every year. Because I told the man there,
6 when I was down there, about that trash dump up
7 there. They filled it in and all that water was
8 running down the road and stuff down there. They
9 went over there and looked at it and they started
10 working on that right then, put wells down and
11 stuff, because it was ruining our water down
12 through there too.

13 MS. BENNETT: Tim, do you know anything
14 about that? It might be the county that's doing
15 it.

16 MR. HORNOSKY: I don't know of anybody
17 at DHEC doing that.

18 MR. SPIGNER: Well, they come by.

19 MR. HORNOSKY: I've not seen any well
20 water results from drinking water wells over there.

21 MR. SPIGNER: Well, they -- what they
22 do, they come and they pump it in a thing and they
23 put something in there and check it.

24 MRS. KAMINER: How long has it been?

25 MR. SPIGNER: It's been about a year

1 now, I reckon, since they've been by.

2 MR. KAMINER: I think it might be a
3 good idea to check the wells that close.

4 MS. BENNETT: Well, I think it's a good
5 idea, too. And like I said, that's one of the
6 things -- I mean, I didn't mention it, but that's
7 one of the things that was recommended to us, to go
8 ahead and do another well survey, since it had been
9 years since we had done one, to see who was on well
10 water and then check those wells. We did take up a
11 lot of our old monitoring wells, some that had been
12 coming up clean for years and years that we no
13 longer had to use. And so, since they were a real
14 eyesore, you know, with the big posts and
15 everything, we decided to take them out of people's
16 yards.

17 MR. SPIGNER: Yeah, they just took four
18 up there in the last while. I'm right there right
19 up from where y'all got your treatment plant. I
20 used to go down there and look at them doing that
21 too. I'm right there where everything is. That's
22 what I'm talking about, where we stay, me and my
23 mama. And then Ms. Palmer, she stays down the road
24 from us. Well, they checked her water too. It's
25 just two of us right in there on well water right

1 now. And then J.W. Ballentine, right across the
2 railroad there and stuff, he had well water there
3 dispatched.

4 And that's when we started with this
5 thing, was when them boys out of Charleston come up
6 there and started. Because them boys, they had
7 them trucks lined up out there, and when they would
8 go out there and run them trucks -- the guys told
9 me that green stuff would be running off them
10 trucks when they got to North Carolina, because
11 they just let it drip all over the ground and stuff
12 and all that.

13 MR. KAMINER: I'm going to get back up.
14 I hate to -- I'm James Kaminer, again. My wife
15 worked at this pallet company which joins this
16 other pallet -- where the treatment plant was.
17 When it rained, this green stuff would wash down
18 from up there to that building. They had to quit
19 using their water.

20 I traveled. I traveled all over the
21 States. I'd get behind them trucks 100 miles out
22 from Columbia, South Carolina, and this green stuff
23 would drop out from them trucks on my windshield.
24 I went to DHEC, myself, talked to a Mr. Jackson --
25 is that right -- years ago. He was the head of

1 DHEC, whoever it was. I explained to him about
2 what was going on over there.

3 He said, Don't worry. We know about
4 it. We are going to handle it.

5 I said, What do you think it's going to
6 cost to have this thing cleaned up?

7 We don't worry about that. We're going
8 to take everything they got.

9 I said, Fine. They don't own nothing.
10 Everything they got is leased at that plant, every
11 truck they got, the land's leased, all the
12 equipment is leased. I said, What are you going to
13 take? They ain't got nothing.

14 He said, Well, we know what we're
15 doing.

16 So that went on. A little later,
17 another neighbor that put down a well, the water
18 come out green. I carried it -- I carried -- I got
19 it out of the spigot -- the man who put down the
20 well put it in a jar for me. I go back over to
21 DHEC with this water. I asked to speak to the man.
22 They said, He ain't here. He ain't got time to
23 talk to you.

24 I said, I'm going to sit in this office
25 until somebody talks to me today.

1 I sat there about an hour. They come
2 up and said, Well, there ain't nothing wrong with
3 the water.

4 I said, Drink it.

5 Oh, no. There ain't nothing wrong with
6 it.

7 I said, Drink it, then.

8 And I finally went around to four or
9 five desks and tried to get them to drink it. They
10 wouldn't do it. They finally decided they'd take
11 me to the room and talk to me. So that's when we
12 went through all this mess about the -- what it's
13 going to cost. So probably -- this is probably how
14 everything started, but they waited a year before
15 they done anything about it.

16 So I'm -- you know, we are really
17 disgusted with the way that things started. So, I
18 mean, I just want to say my piece.

19 And I think my mother-in-law lives
20 right across the street, and I -- what's her
21 address?

22 MRS. KAMINER: 120 Pallet Drive.

23 MR. KAMINER: One what?

24 MRS. KAMINER: 120 Pallet Drive.

25 MR. KAMINER: 120 Pallet Drive.

1 MS. BENNETT: Is her name Mary?

2 MRS. KAMINER: Mildred.

3 MR. KAMINER: Mildred Spigner. And I'd
4 like for DHEC to check her water to be sure her
5 well is safe. My brother-in-law right here lives
6 at -- right next door to her.

7 MR. SPIGNER: 126 Pallet Drive.

8 MRS. SPIGNER: 126.

9 MR. KAMINER: 126. I requested that
10 they check his water, be sure it's right. And we'd
11 like a report back about the water samples. Would
12 that be asking too much?

13 MS. BENNETT: No, that wouldn't be
14 asking too much.

15 MR. HORNOSKY: Tell me again. You said
16 your brother's?

17 MR. KAMINER: My brother-in-law,
18 Richard Spigner.

19 MS. BENNETT: Tim, it'll be on the
20 transcript.

21 MS. STARKS: It'll be on the
22 transcript.

23 MRS. KAMINER: I mean it costs a lot of
24 money to put her on city water.

25 MR. KAMINER: Yeah. See now, they

1 didn't -- they put -- they wouldn't -- she -- her
2 mother is low income and she can't afford Cayce
3 water. She's got a well, you know, so I think that
4 it ought to be checked.

5 MRS. KAMINER: They were going to --
6 they'd charge her a bunch of money to hook up. We
7 didn't cause this problem.

8 MR. SPIGNER: I want to say one more
9 thing. When they had the meeting at the church
10 down there they told us, Well, everybody up here
11 might have to get on city water. I forgot to tell
12 you I'm Richard Spigner, again, but you know.

13 And they said we might have to get on
14 it. I said, Well, who is going to pay for it? I
15 didn't mess the water up in the ground.

16 They said, Oh. They said, We're going
17 to have to check on that and see.

18 I said, I wouldn't mind getting on it
19 if somebody else pays for it, but there ain't no
20 use for me to pay no \$1,500 for it. I didn't mess
21 it up and all and stuff.

22 MS. BENNETT: Well, like I said, I was
23 under the impression that everybody in that general
24 area was on city water, you know, when I --

25 MR. SPIGNER: No.

1 MS. BENNETT: When I called the county,
2 they were like, Yeah, everybody on that side is on
3 city water. So...

4 MR. SPIGNER: It's two wells over
5 there. There's me -- three wells: Me, my mama and
6 Mrs. Palmer. We're not on it. Because they said
7 the stuff was -- they had the wells right there at
8 the mailboxes. They said the stuff was going the
9 other way, towards where y'all got your treatment
10 plant there.

11 Now, Tommy Davis and his sister-in-law,
12 they're on city water, and this other trailer right
13 there by them, and the trailer right down the road
14 from us, they're on city water. And Captain of the
15 Sea down there was on city water, because I think
16 y'all get y'all's water for the treatment plant off
17 of his meter.

18 MS. BENNETT: Yeah. Captain David.

19 MR. SPIGNER: Captain David. Yeah. I
20 call him Captain of the Sea. But I ain't seen him
21 in a long time.

22 MS. BENNETT: Yeah. He said he was in
23 Thailand.

24 MR. HORNOSKY: Tim Hornosky, again.
25 So, as far as you're aware, there are only two

1 wells that are still in use?

2 MRS. SPIGNER: Three.

3 MR. SPIGNER: Three.

4 MRS. SPIGNER: And Mrs. Palmer.

5 MR. SPIGNER: J.W.'s over there, right
6 there at the treatment plant. I don't know whether
7 J.W.'s still got his. He might not be on city
8 water neither. I know they was using that at one
9 time. (Multiple speakers.)

10 MS. BENNETT: Just remember, now, we
11 have a court reporter that's trying to take
12 everything down. And that'll be the record, you
13 know, I can look on the transcript and get all the
14 addresses and everything, so it's real important
15 for you to speak loud so she can capture
16 everything.

17 And we don't have to wait -- you know,
18 most of the time we wait until we get the record of
19 decision signed before we go ahead and start
20 action, but something like that, we can go ahead
21 and sample those wells. So if you put your phone
22 number on there, then my contractor or somebody
23 will be calling you, asking you when they can come
24 out to sample your well.

25 MR. EGGERT: This is Tim Eggert with

1 Black & Veatch. Are all those homes located off of
2 Pallet Drive if you were to go across the railroad
3 tracks and just keep kind of going straight?

4 MR. SPIGNER: Yeah. They're on the
5 right as you go across the railroad. See, what you
6 don't understand, when you come off the highway
7 that's Pallet Drive. It goes straight across,
8 straight down. When you go to your left that's
9 Pallet Court.

10 MS. BENNETT: Okay.

11 MR. SPIGNER: That might be what's
12 getting y'all mixed up. Down by the mailboxes,
13 like you're going to y'all's treatment plant,
14 that's Pallet Court down there.

15 MS. BENNETT: Okay.

16 MRS. KAMINER: My name is Doris
17 Kaminer, again. I'm just going to give you one
18 more. My mom is at 120 Pallet Drive. And just as
19 you go across the railroad hers is the little white
20 house. You can see it from the railroad. My
21 brother's right down below it. There's the two
22 wells. I do want her water tested. I just wanted
23 to let you know where she was.

24 MS. STARKS: Are there any more
25 comments or questions?

1 MR. WHIPPLE: Ms. Bennett.

2 MS. BENNETT: Yes.

3 MR. WHIPPLE: Chuck Whipple. Have you
4 tested ground water to the south of the property
5 parallel to Interstate 26 for about two miles?

6 MS. BENNETT: Can you point on that map
7 where it is, where it is you're talking about?

8 MR. WHIPPLE: Can you go back to the
9 slide that has -- that slide. In here, in that
10 corridor.

11 MS. BENNETT: No. That wouldn't be
12 affected by Palmetto at all based upon the flow of
13 the ground water.

14 MR. WHIPPLE: Okay.

15 MS. BENNETT: So, no.

16 MS. STARKS: Are there any more
17 questions?

18 This will conclude our meeting. Thank
19 you for coming out.

20 MS. BENNETT: And we'll be available if
21 you want to just come up and talk.

22 (The public hearing was concluded at
23 7:28 p.m.)

24

25

CERTIFICATE OF REPORTER

I, Angela D. Zuver, Court Reporter and
Notary Public for the State of South Carolina at
Large, do hereby certify that the foregoing
transcript, pages 1 through 23, is a true,
accurate, and complete record.

I further certify that I am neither
related to nor counsel for any party to the cause
pending or interested in the events thereof.

Witness my hand, I have hereunto
affixed my official seal this 24th day of April,
2008 at Lexington, Lexington County, South
Carolina.

Angela D. Zuver
Angela D. Zuver, Court Reporter
My Commission expires
July 2, 2014

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Page

WITNESS/EXAMINATION

CERTIFICATE OF REPORTER

22

REQUESTED INFORMATION INDEX

(No Information Requested)

E X H I B I T S

(No Exhibits Proffered)

APPENDIX C

ADMINISTRATIVE RECORD INDEX

[Draft]

**Administrative Record Index
for the
PALMETTO WOOD PRESERVING NPL Site
(Amendment to Record of Decision)
SCD003362217**

4.0 FEASIBILITY STUDY (FS)

4.10 Proposed Plans for Selected Remedial Action

1. "Proposed Revision to Cleanup Plan, Palmetto Wood Preserving Site, Dixiana, Lexington County, South Carolina," EPA Region 4. (March 2008)

6.0 REMEDIAL DESIGN (RD)

6.8 Remedial Design Documents

1. "Wetlands Delineation Report for the Remedial Design, Palmetto Wood Preserving Site, Lexington County, South Carolina," CDM Federal Programs Corporation. (April 19, 1994)

7.0 REMEDIAL ACTION (RA)

7.1 Correspondence

1. E-mail from Andre Zownir, EPA to William Joyner, EPA Region 4. Transmitting attached memorandum dated June 30, 2003 regarding review of the pump and treat system at the site. (July 01, 2003)
2. Letter from William Joyner, EPA Region 4 to Frank Robinson, City of Cayce. Regarding the groundwater treatment system. (September 16, 2003)
3. Memorandum from Minda Johnson-Schmiedel and Keisha Long, Bureau of Land and Waste Management to William Joyner, EPA Region 4. Regarding evaluation of the current groundwater treatment system. (April 19, 2004)
4. Memorandum from Andre Zownir, EPA to William Joyner, EPA Region 4. Regarding the review of the December 2003 Data Summary Report and the February 2004 Aquifer Cleanup Goal Monitoring Report. (May 21, 2004)
5. Trip Report from David Edgerton, Lockheed Martin to Andre Zownir, EPA. Regarding October 2004 Groundwater Sampling Event. (January 13, 2005)
6. Trip Report from David Edgerton, Lockheed Martin to Andre Zownir, EPA. Regarding March 2005 Groundwater Sampling Event. (June 22, 2005)
7. Letter from Tim Hornosky, South Carolina Department of Health and Environmental Control (SCDHEC) to Giezelle Bennett, EPA Region 4. Regarding review of the Draft Pilot Study Work Plan. (December 21, 2006)

7.2 Sampling and Analysis Data

1. Letter from Tim Eggert, Black & Veatch to Giezelle Bennett, EPA Region 4. Regarding the Phase II Analytical Results for the Pilot Study Field Investigation. (February 15, 2007)

7.4 Work Plans and Progress Reports

1. "Final In Situ Anaerobic Bioremediation Groundwater Pilot Study and Soil Treatment Work Plan, Palmetto Wood Preserving Site, Dixiana, Lexington County, South Carolina," Black & Veatch Special Projects Corp. (January 2007)

[Draft]

**Administrative Record Index
for the
PALMETTO WOOD PRESERVING NPL Site
(Amendment to Record of Decision)**

7.0 REMEDIAL ACTION (RA)

7.8 Remedial Action Documents

1. "Final In Situ Anaerobic Bioremediation Groundwater Pilot Study and Soil Treatment Report of Findings, Palmetto Wood Preserving Site, Dixiana, Lexington County, South Carolina," Black & Veatch Special Projects Corp. (January 2008)

8.0 SITE CLOSEOUT

8.6 Long Term Response

1. Memorandum from Alfred Cherry, EPA Region 4 to Richard Green, EPA Region 4. Providing the Five-Year Review Report for the Palmetto Wood Preserving Site. (June 26, 1997)
2. "Second Five-Year Review Report for Palmetto Wood Preserving Site, Dixiana, Lexington County, South Carolina," US Army Corps of Engineers, Charleston District. (September 18, 2002)
3. "Third Five-Year Review Report for Palmetto Wood Preserving Site, Dixiana, Lexington County, South Carolina," South Carolina Department of Health and Environmental Control. (September 27, 2007)

13.0 COMMUNITY RELATIONS

13.9 Fact Sheets

1. Cross Reference: "Proposed Revision to Cleanup Plan, Palmetto Wood Preserving Site, Dixiana, Lexington County, South Carolina," EPA Region 4. (March 2008) [Filed and cited in Entry Number 1 of 4.10 FEASIBILITY STUDY (FS) - Proposed Plans for Selected Remedial Action]

APPENDIX D

PROPOSED PLAN NOTICES

COMMENTARY

Self-financed Ravenel folly

The drug conviction of former state treasurer Thomas Ravenel had gotten all the headlines. But the real Ravenel scandal is the way in which he got himself elected by legally using South Carolina's archaic campaign finance system to bamboozle the voters into electing him in 2006 and Ravenel's willingness to make the taxpayers pay the \$28,600 it cost to convene a special session of the General Assembly to select his successor.

Fortunately, federal Judge Joseph P. Anderson Jr. imposed a precedent-setting sentence on Ravenel that required him to repay the taxpayers for the cost of the special session. This precedent should be adopted by the General Assembly for all such cases. Also, Sen. Harvey Peeler introduced a bill to require drug testing of state and local candidates in the future.



John Crangle
Guest Columnist

The major issue is that Ravenel donated \$1 million of his own money to his campaign for treasurer, while one of his opponents, Sen. Greg Ryberg, donated \$2 million of his own money to his campaign. These huge donations showed that self-financed millionaire candidates have appeared for the first time in South Carolina in the wake of a growing national trend in which billionaire Michael Bloomberg spent some \$70 million of his own money getting elected mayor of New York and Jon Corzine spent nearly the same amount getting elected to the U.S. Senate from New Jersey.

It is obvious that self-financed, rich candidates have major unfair advantages over non-wealthy candidates who must raise contributions to run — rich candidates can donate huge unlimited sums to their own campaigns while normal fund-raiser candidates are limited by state law to no more than \$3,500 per source per election for statewide office or \$1,000 per source for legislative office. The rich candidate can donate much more to his campaign than his fund-raiser opponent can raise, and further spend no time on fund-raising and much more time campaigning.

Furthermore, the self-financed candidate can do what Ravenel did by spending unlimited sums on slick television ads that portray the candidate as a very different person from who he really is. Since Ravenel had never held public office before and had no track record, whereas his chief primary opponent Sen. Ryberg had been in the Senate complaining of government waste since 1993, it was

possible for Ravenel to perform a television candidate's extreme makeover of himself in the image of a law-abiding, responsible, dynamic young businessman who would give new leadership to the treasurer's office.

In fact, it turned out that Ravenel had a major substance abuse problem and was given to a party animal lifestyle in Charleston. In an age when fewer and fewer voters read the newspaper and more and more rely on television for their political information, and in an age when newspaper and television news is more about shootings, sex scandals and celebrity antics, the voters easily swallow slick saturation television ads. If Ravenel had to rely on fund-raising, it would have been much more difficult for him to raise campaign money, especially from his closest associates and well-informed citizens who knew him for who he really was. With a lot less money, it would have been much more difficult for him to use glossy television ads to fool the voters in two 2006 elections into buying a pig in a poke.

The remedy for the problem of self-financed, big-money candidates is a new form of public financing in which candidates are able to receive public funds to match those donated by self-financed candidates. Such a system would not violate the U.S. Supreme Court ruling in Buckley v. Valeo that self-financing couldn't be prohibited because it was free speech, and such a system would probably cost the taxpayers little or nothing. Why would Thomas Ravenel donate \$1 million to his own campaign if he knew that his opponent could get the same amount of state funds merely by filing for it?

The self-financed candidate would have to be smoking something.

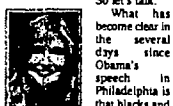
Mr. Crangle is the executive director of Common Cause/South Carolina.

The wounds Wright revealed

Barack Obama's race speech didn't adequately answer the key question of his relationship with the Rev. Jeremiah Wright, but his comments were revelatory in important ways.

What Obama highlighted, if indirectly, is the dormant disconnect between much of black and white America. And what he revealed, if accidentally, is that he has contributed to that disconnect as a passive participant.

We need to talk, Obama says.



Kathleen Parker
Washington Post Writers Group

So let's talk. What has become clear in the several days since Obama's speech is that blacks and whites see things differently. In some cases, as different as black and white.

To the average white American, especially one who doesn't subscribe to the fire-and-brimstone school of religious expression, Wright is an unfamiliar character. He may be a Christian, but his orientation is African, and he speaks the language of white conspiracy.

What was jolting for many whites was that Wright has a following — to each his own — but that Obama, a man who intends to lead an entire country, found a home among the pews of Wright's church. That Obama eventually distanced himself from some of Wright's rhetoric only raises the second question: What took so long?

How can anyone sit in a church where the minister says, for instance, that the U.S. government invented the AIDS virus to kill blacks? Obama may have been too young or too naive at some point along his 20-year relationship with Wright, but eventually, shouldn't the man who became an Illinois state senator and then a U.S. senator and then a presidential contender have spoken up before he was forced to?

Those are reasonable questions, but they are mostly white questions. Blacks have others.



Obama was correct when he said that Wright, though sometimes wrong, spoke to deep wounds and a history most whites don't like to examine too closely.

The historical experience of blacks and whites in this country couldn't be more different. Whites know it intellectually, but blacks feel it viscerally. No matter how many books we read or movies we watch, whites can never quite grasp what it is to be black or to be denied from people who were denied their humanity and enslaved by whites with the benign approval of the state.

But we didn't do it, we protest. Our churches aren't guilty. When is enough enough? Why must preachers such as Wright insist on fanning those flames?

White Americans want to put race behind them, to move on. And many had hoped Obama was the man to make that happen. The big surprise was learning that he belongs to a church where the past is loudly present. Obama gave himself away when, in his speech, he paraphrased William Faulkner: "The past isn't dead and buried. In fact, it isn't even past."

Black history, meanwhile, makes it possible for many to accept the theory advanced by Wright that white men invented the AIDS virus to destroy black populations. After all, the 40-year Tuskegee syphilis study, in which about 400 black men with syphilis were left untreated and uninformed as part of an experiment, was conducted under the auspices

of the U.S. Public Health Service.

Given that history, the AIDS theory doesn't require much of a leap for many in the black community. The AIDS virus has hit African-Americans harder than any other group. For blacks in the United States, HIV/AIDS is a leading cause of death, according to the Centers for Disease Control and Prevention. Even though blacks account for about 13 percent of the U.S. population, they account for 49 percent of those who get HIV and AIDS. Whites account for 31 percent.

A white person might view these statistics on the CDC Web site and understand that blacks suffer more in part because of barriers such as poverty, sexually transmitted disease and cultural stigmas that put blacks at higher risk. Blacks — especially those under the spell of Wrighteousness — might view the same information and at least wonder if something else is going on.

So, yes, there is work to be done. Between a history of distrust born of painful experience — and people like Wright who keep that history alive and well-stoked — racial harmony will require more than hope. It will also require that people like Obama speak up and object to harmful rhetoric, sooner rather than later, even if it hurts the ones he loves.

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Palmetto Wood Preserving Site
Proposed Revision to Cleanup Plan
Dixiana, Lexington County, SC

The U.S. Environmental Protection Agency (EPA) Region 4 is conducting a public meeting for the Proposed Revision to Cleanup Plan for Palmetto Wood Preserving Site, Lexington County, South Carolina. The meeting will provide residents an opportunity to learn about and discuss upcoming activities at the site. The purpose of the Proposed Plan Meeting is to inform the public of the preferred remedy for the clean-up of the Site. The Proposed Revision to Cleanup Plan Fact Sheet will be mailed out to the community and placed in the Site Information Repository, located at the Lexington County Main Library, 5440 Augusta Road, Lexington, SC.

EPA has established a 30 day Comment Period from March 24 - April 23, 2008, for community members to express their views about the preferred remedy. Please submit comments to Guadalupe Bennett, Remedial Project Manager at the U.S. EPA, Superfund Division, 61 Forsyth Street, Atlanta, GA 30303 or bring your comments to the public meeting. If you do not receive a copy of the Proposed Revision to Cleanup Plan Fact Sheet and would like to have one mailed to you, please contact Linda Starks, EPA Public Affairs Specialist, at the number below to request a copy. Copies will also be available at the public meeting.

The Public Meeting will be held at:

Lexington County Chambers
212 South Lake Drive
Lexington, South Carolina
Thursday, April 3, 2008 - 7:00 - 9:30 p.m.

If you have concerns we urge you to attend the meeting. Persons interested in obtaining information about this site should contact Guadalupe Bennett, Remedial Project Manager at (404) 562-8824, or Linda Starks, Public Affairs Specialist at (404) 562-8487.

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RECRUITING

Marlboro County twins Tariq and Tyrell Edwards visit USC.

SETH EMERSON'S BLOG

Keep up with USC's search for a new basketball coach.

BASEBALL

Read recaps from the Sandlapper and Forest Acres Classic tournaments.

SOCCER

Get updated boys high school statistics on the leader board.

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Sports Two: Weekend TV

FRIDAY, MARCH 28, 2008 • PAGE C2

FIVE-GAME PLANNER

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BASEBALL				
	Today at Maryland 7 p.m.	Tuesday at Maryland 4 p.m.	Wednesday at Maryland 1:30 p.m.	Thursday at Georgia 7 p.m.
	Today at Maryland 7 p.m.	Tuesday at Maryland 4 p.m.	Wednesday at Georgia 7:15 p.m.	Thursday at Georgia 7 p.m.
MINOR LEAGUE HOCKEY				
	Today at Augusta 7:05 p.m.	Tuesday at S. Carolina 7:05 p.m.	Thursday at Charlotte 7:05 p.m.	Friday at Charlotte 7:05 p.m.

Interim Tickets: (803) 256-7825

CHANNEL HOPPING

Covering the Cup, ETV will be at Camden's Springdale Race Course on Saturday for the 76th Carolina Cup. The race will air at 6:30 p.m. April 6 on WRLL-35 (cable channels 11 and 801 in Columbia). Mark Quinn, Amanda Alpert and Tabitha Lewis will provide commentary.

The Year's Opening Day. On Monday, which many consider Major League Baseball's traditional Opening Day, ESPN (cable channel 28, high definition channel 950) and ESPN2 (cable channel 27, HD channel 951) will telecast five games. ESPN will have Toronto at the N.Y. Yankees at 1 p.m. and San Francisco at the L.A. Dodgers at 4 p.m.

ESPN2 will have Milwaukee at the Chicago Cubs at 2 p.m., L.A. Angels at Minnesota at 7 p.m. and Houston at San Diego at 10 p.m.

Telemundo in the spring. For the first time, ESPN's "College GameDay" will broadcast from the site of a college football spring game. On April 12, the show will air at 11 a.m. on ESPN and then switch to ESPN2 at noon from Gainesville, Fla. ESPN will televise the Florida spring game at 1 p.m. The show and game coverage will be hosted by Chris Fowler with analysts Lee Corso, Kirk Herbstreit and Desmond Howard. Erin Andrews will be on the sidelines.

— Doug Nye

Time Warner optimistic about Braves' TV package



Doug Nye

On the Air
Appears every Friday
dny@mycolumbiastates.com

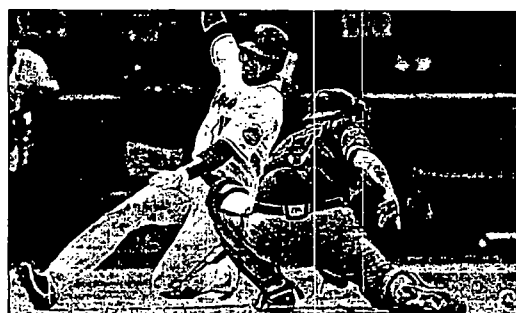
TIME WARNER'S DAN Santelle is awaiting word that a deal had been struck to carry the 45 Atlanta Braves games being produced by Peachtree TV.

"I really believe it's going to happen," Santelle said. "We certainly want to have them on our system. Right now, I don't know what channel the games would be on, but I'm putting them in a spot in the lineup that is available to as many people as possible."

The Braves' first game to be produced by Peachtree will be their home opener against Pittsburgh at 7:10 p.m. Monday. Skip Curry and Chip Curry will be the announcers for the telecast.

Comcast Cable (available in various parts of the state) will carry the 45-game package. They will also carry Comcast systems in South Carolina, Tennessee, Mississippi, Alabama, Georgia (outside the Atlanta metro area) and Asheville, N.C.

Braves fans can get their first look at the team when they face Washington at 8 p.m. Sunday on ESPN (cable channel 26, high definition channel 950).



Most Atlanta Braves games this season against teams such as the New York Mets will be broadcast on SportsSouth and Fox Sports Net.

Jon Miller and Joe Morgan will do the game.

It is a new era for the Braves on television with SportsSouth (cable channel 21) and Fox Sports Net (cable channel 31) doing the majority of Atlanta's games this season. No one is happier about that than Jeff Gentner, senior vice-president and general manager of the two channels.

"We saw this as an opportunity to position ourselves as the home of the Braves franchise,"

Gentner said. "We're going to offer in-depth coverage of all the games we do."

SportsSouth and Fox Sports Net combined will televise 106 regular season games, 49 of them in high definition. Jon Scambi will be the play-by-play announcer. Jon Scambi and Joe Simpson will serve as analysts.

The first high-def game will be Wednesday's and Thursday's 7 p.m. home games against the Pirates. The HD telecast will be on Time Warner channel 813.

Baseball bonuses. Time Warner again is offering Major League Baseball's Extra Innings package, which allows subscribers to watch as many as 80 out-of-market games a week. The cost is \$159 for the entire season for those who sign up prior to April 6. It is \$199 after that.

The games will air on channels 431-464. Those on channel 430 will be in high definition. You must have a digital converter box to have access to Extra Innings.

TV AND RADIO

The time listed is the scheduled start of that network's coverage.

TODAY

AUTO RACING
3:40 p.m. NASCAR Sprint Cup Qualifying. From Martinsville, Va. SPEED

COLLEGE BASEBALL
7 p.m. Kentucky at South Carolina. WNKT-FM 107.5. WISW-AM 1320

COLLEGE BASKETBALL
7:10 p.m. NCAA tournament, Midwest Regional Semifinal. Davidson vs. Wisconsin. From Detroit. CBS, WLTX-19, 19-1, TW channels 9, 810

7:27 p.m. NCAA tournament, South Regional Semifinal. Texas vs. Stanford. From Houston. CBS, WLTX-19, 19-1, TW channel 811

9:40 p.m. NCAA tournament, Midwest Regional Semifinal. Villanova vs. Kansas. From Detroit. CBS, WLTX-19, 19-1, TW channel 811

9:57 p.m. NCAA tournament, South Regional Semifinal. Memphis vs. Michigan St. From Houston. CBS, WLTX-19, 19-1, TW channel 810

BOXING

9 p.m. Kassim Ouma vs. Cornelius Blidrago. Junior Middleweights. From Salamanca, N.Y. ESPN2

GOLF

10:30 p.m. European Tour, Open de Andalucia, Second Round. From Marbella, Spain. TGC

1 p.m. Champions Tour, The Ginn Championship of Hammock Beach, First Round. From Palm Coast, Fla. TGC

3 p.m. PGA, Zurich Classic, Second Round. From New Orleans. TGC

6:30 p.m. PGA, Safeway International, Second Round. From Superstition Mountain, Ariz. TGC

COLLEGE HOCKEY
4 p.m. NCAA tournament, East Regional Semifinal. St. Cloud State vs. Clarkson. From Albany, N.Y. ESPN2

7:30 p.m. NCAA tournament, East Regional Semifinal. Michigan vs. Niagara. From Albany, N.Y. ESPN2

10 p.m. NCAA tournament, West Regional Semifinal. Colorado College vs. Michigan State. From Colorado Springs, Colo. ESPN2

1 p.m. NCAA tournament, West Regional Semifinal. Notre Dame vs. New Hampshire. From Colorado Springs, Colo. ESPN2, tape delay

SATURDAY

AUTO RACING
3 p.m. NASCAR Craftsman Truck Series. Kroger 250. From Martinsville, Va. FOX, WACH-57

4:30 p.m. O'Reilly NHRA Spring Nationals Qualifying. From Baytown, Texas. ESPN2, tape delay

8 p.m. XFL Indy 300. From Homestead, Fla. ESPN2

9 p.m. NASCAR Sprint Cup Final Practice. From Martinsville, Va. SPEED, tape delay

10 p.m. O'Reilly NHRA Spring Nationals Qualifying. From Baytown, Texas. ESPN2, tape delay

PRESEASON BASEBALL

5 p.m. Chicago White Sox vs. New York Mets. From Memphis, Tenn. ESPN

COLLEGE BASEBALL

1 p.m. Virginia Tech at Virginia. FSN

4 p.m. Kentucky at South Carolina. WNKT-FM 107.5. WISW-AM 1320

4 p.m. Arkansas at Vanderbilt. FSN

4 p.m. Tennessee at Auburn. CSS

7 p.m. Nebraska at Texas. FSN

COLLEGE BASKETBALL
New Women's NCAA Tournament, Regional Semifinal. North Carolina vs. Louisville. From New Orleans. ESPN2

2 p.m. Women's NCAA Tournament, Regional Semifinal. Oklahoma State vs. LSU. From New Orleans. ESPN2

8 p.m. Women's NCAA Division II Championship. From Kearney, Neb. ESPN2

6:30 p.m. NCAA Tournament, Regional Final. North Carolina vs. Tennessee or Louisville. From CBS, WLTX-19, 19-1, TW channels 9, 810

8:50 p.m. NCAA Tournament, Regional Final. Xavier vs. UCLA or Western Kentucky. From CBS, WLTX-19, 19-1, TW channels 9, 810

9 p.m. Women's NCAA Tournament, Regional Semifinal. Maryland vs. Vanderbilt. From Spokane, Wash. ESPN

11:30 p.m. Women's NCAA Tournament, Regional Semifinal. Stanford vs. Pittsburgh. From Spokane, Wash. ESPN2

ARENA FOOTBALL
2 p.m. Tampa Bay Storm at Philadelphia Soul. ESPN2

GOLF
10 a.m. European Tour, Open de Andalucia, Third Round. From Marbella, Spain. TGC

1 p.m. Champions Tour, Ginn Championship of Hammock Beach, Second Round. From Palm Coast, Fla. TGC

3 p.m. PGA, Zurich Classic, Third Round. From New Orleans. NBC, WIS-10

6:30 p.m. PGA, Safeway International, Third Round. From Superstition Mountain, Ariz. TGC

PRO HOCKEY
7:30 p.m. Carolina Hurricanes at Tampa Bay Lightning. FSN

COLLEGE HOCKEY
4 p.m. NCAA Tournament, Northeast Regional Semifinal. Air Force vs. Miami (Ohio) From Worcester, Mass. ESPN2

7 p.m. NCAA Tournament, East Regional Final. From Albany, N.Y. ESPN2

10 p.m. NCAA Tournament, West Regional Final. From Colorado Springs, Colo. ESPN2

1 a.m. NCAA Tournament, Northeast Regional Semifinal. Boston College vs. Miami, Ohio. From Worcester, Mass. ESPN2, tape delay

HORSE RACING
5 p.m. Florida Derby. From Hallandale, Fla. ESPN2

TENNIS
3 p.m. ATP Masters Series, Ericsson Open, Early Rounds. From Miami. SPSO

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Palmetto Wood Preserving Site
Proposed Revision to Cleanup Plan
Dixiana, Lexington County, SC

The U.S. Environmental Protection Agency (EPA) Region 4 is conducting a public meeting for the Proposed Revision to Cleanup Plan for Palmetto Wood Preserving Site located in Dixiana, Lexington County, South Carolina. The meeting will provide residents an opportunity to learn about and discuss upcoming action items at the site. The purpose of the Proposed Plan Meeting is to inform the public of the preferred remedy for the cleanup of the Site. The Proposed Revision to Cleanup Plan Fact Sheet will be mailed out to the community and placed in the site information repository located at the Lexington County Main Library, 5440 Augusta Road, Lexington, SC.

EPA has established a 30 day Comment Period from March 24 - April 23, 2008, for community members to express their views about the preferred remedy. Please submit comments to Giselle Bennett, Remedial Project Manager at the U.S. EPA Superfund Division, 61 Forsyth Street, Atlanta, GA 30303 or bring your comments to the public meeting. If you did not receive a copy of the Proposed Revision to Cleanup Plan Fact Sheet and would like to have one mailed to you, please contact Linda Starks, EPA Public Affairs Specialist, at the number below to request a copy. Copies will also be available at the public meeting.

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Lexington County Chambers
212 South Lake Drive
Lexington, South Carolina
Thursday, April 3, 2008 - 7:00 - 8:00 p.m.

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NATION

Bail out homeowners?

Republicans in high-foreclosure states torn between helping, showing restraint

By DAVID M. HERZENHORN
The New York Times

MIAMI, Fla. — In Los Portales, a pink and terra cotta condominium complex in this city of hard-working and often hard-luck Hispanic immigrants, many of Juan Carpio's neighbors are losing their homes.

"The government should help," said Carpio, 57, a former truck driver whose wife is a security guard. "Somebody ought to do something."

In Carpio's view, that somebody could be Rep. Lincoln Diaz-Balart, an eight-term Republican who represents Miami and whose district slices through Miami-Dade into Broward, two counties in the top 10 of foreclosures nationwide.

But as Congress returns from recess Monday for a furious debate over whether to help homeowners on the brink of default,

Diaz-Balart is caught in a crunch of his own.

On one side, Democrats emboldened by the Federal Reserve's intervention in the collapse of Bear Stearns are demanding help for "everyday Americans." On the other, Republicans including Sen. John McCain, the party's presumptive nominee, are urging restraint, reluctant to commit taxpayer funds to what they say is a bailout for greedy lenders and reckless buyers.

It is a bind shared by other Republicans, especially from high-foreclosure states like Arizona, California, Michigan, Nevada and Ohio. The Democratic Congressional Campaign Committee has a list of 18 districts where it plans to highlight high foreclosure rates in its effort to oust Republican incumbents this year.

So Diaz-Balart is treading carefully. He says he is open to some of the Democrats' ideas but has

not decided how he will vote on a proposed \$300 billion loan guarantee program to prevent foreclosures and an array of other expected housing initiatives in the next few weeks.

With Democrats seeing the housing issue as a powerful election-year weapon, it is unclear how flexible they will be about debating affordable housing ideas or other Republican counterproposals. Democrats have been aiming a barrage of criticism at President Bush and McCain for not offering more help.

With Henry M. Paulson Jr., secretary of the Treasury, planning to unveil a package of regulatory reforms Monday, almost all requiring the approval of Congress, Democrats are certain to insist that helping individual homeowners remains their most immediate priority.

While the Bush administration has also signaled that it may be willing to extend additional federal loan guarantees to help stem foreclosures without new legislation, the Democrats say they will push for more.



**Palmtoe Wood Preserving Site
Proposed Revision to Cleanup Plan**
Dixiana, Lexington County, SC

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The Public Meeting will be held at:

Lexington County Chambers
112 North Latta Drive
Lexington, South Carolina
Thursday, April 2, 2008 - 7:00 - 8:30 p.m.

If you have concerns we urge you to attend the meeting. Persons interested in obtaining information about this site should contact Geraldine Bennett, Remedial Project Manager at (404) 562-8824, or Linda Starks, Public Affairs Specialist at (404) 562-8487.

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